

科技部補助專題研究計畫成果報告 期末報告

超越移轉：電腦輔助英語教學師資課程中之知識連結

計畫類別：個別型計畫
計畫編號：MOST 102-2410-H-004-104-
執行期間：102年08月01日至103年10月31日
執行單位：國立政治大學英國語文學系

計畫主持人：招靜琪

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報告附件：出席國際會議研究心得報告及發表論文

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中華民國 103 年 12 月 10 日

中文摘要：電腦輔助語言教學(CALL)之教師專業發展課程，經常以所謂的知識轉移(transfer)為其最終目標，許多研究探討的是老師們為什麼不用 CALL 教師訓練裡教的內容，採用的是結果導向的思維。然而，科技進步極速，尋求單純的結果轉移變得不合情理。更重要的是，近年來語言老師專業發展的文獻對老師的學習過程特別予以強調，但是 CALL 教學知識建構與聯結經驗尚無充分之研究。這個敘事研究計畫分析在職碩班的語言老師們在經歷線上遊戲等以學習者為中心的相關文獻與案例討論之後，其創意教學作品如何呈現出知識建構的特徵。八個月後佐以教學現場之實地訪談，藉以了解 CALL 教師訓練成果之真實表現。老師們所討論的重點文獻包括 James Paul Gee 的「仿遊戲般學習」之概念(2003, 2008, 2005, 2007)以及老師實際參與的線上遊戲經驗，這些閱讀、實戰與討論經驗的目的是引導老師深入思索現代科技帶來的機會與挑戰，轉為自己的創意英語教學。這一個研究可以呈現出一群台灣的中小學英語老師面對研究所課堂中之 CALL 觀念挑戰之下，如何融合教學現場之現實狀況，建構出屬於自己的知識與課室教學實務。研究發現有四種狀況：第一種是非常主動積極的行動派老師，努力地根據某個學到的概念設計她們此後的教學，步驟清楚周到，然而這教學行動並不一定就等同於她所敘述的學習成果，也與學習者為中心的思維不同。第二種老師的連結方式是藉著新知重新思考過去的 CALL 經驗，設法增色或修正過去的實務。第三種老師則是志在蒐集整理 CALL 教師訓練課程所教的內容，以待不確定的未來有需要時可拿出來使用，給人過門而不入的感覺。第四種老師則有很多猶豫或現實面的考慮，造成建構知識或思考教學應用時之綁手綁腳，無法發揮新知識或新科技之特色。研究設計深入分析老師的知識建構狀況，並期待對新時代英語老師的 CALL 學習歷程有更進一步的認識。

中文關鍵詞：電腦輔助語言教學之教師訓練、CALL 教師知識建構與聯結、現職語言教師專業發展

英文摘要：Behind CALL teacher education (CTE) there is an unproblematized consensus of transfer, which suggests a positivist and tool-centered view of learning gains that differs from the sociocultural focus of recent teacher education research. Drawing on Beach's (2003) conceptualization of transfer as consequential transition, this qualitative study seeks a cross-contextual understanding of language teacher learning with digital technology as the teachers in this study

moved from a CTE course back to their own teaching contexts. Near the end of a CTE course, 19 in-service language teachers were asked to build connections between their experiences in the course and their teaching by creating a presentation. Four types of connections were identified, including thoughtful action planning, past experience refinement, and limited and reluctant use. In-depth interviews eight months later with four of the teachers found that they could seldom use the tools in the ways they had planned. However, they each experienced consequential transition as they struggled to reflect on their CTE course experience in everyday teaching. These results challenge the view that transfer in CTE must be about using technology. It is suggested that a focus on critical reflection of technology use may encourage teachers to continue reflective engagement in the ever-changing and complicated digital learning and teaching context.

英文關鍵詞： CALL Teacher Education, Language Teaching Knowledge Construction, Language Teacher Professional Development

科技部補助專題研究計畫成果報告

(期中進度報告/期末報告)

超越移轉：電腦輔助英語教學師資課程中之知識連結

計畫類別：個別型計畫 整合型計畫

計畫編號：MOST 102-2410-H-004-104

執行期間：2013年8月1日至2014年10月31日

執行機構及系所：

計畫主持人：招靜琪

共同主持人：

計畫參與人員：邱兆文、陳宛其、施雅婷

本計畫除繳交成果報告外，另含下列出國報告，共 1 份：

執行國際合作與移地研究心得報告

出席國際學術會議心得報告

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中華民國 103 年 12 月 05 日

摘要

電腦輔助語言教學(CALL)之教師專業發展課程，經常以所謂的知識轉移(transfer)為其最終目標，許多研究探討的是老師們為什麼不用 CALL 教師訓練裡教的內容，採用的是結果導向的思維。然而，科技進步極速，尋求單純的結果轉移變得不合情理。更重要的是，近年來語言老師專業發展的文獻對老師的學習過程特別予以強調，但是 CALL 教學知識建構與聯結經驗尚無充分之研究。這個敘事研究計畫分析在職碩班的語言老師們在經歷線上遊戲等以學習者為中心的相關文獻與案例討論之後，其創意教學作品如何呈現出知識建構的特徵。八個月後佐以教學現場之實地訪談，藉以了解 CALL 教師訓練成果之真實表現。老師們所討論的重點文獻包括 James Paul Gee 的「仿遊戲般學習」之概念(2003, 2008, 2005, 2007)以及老師實際參與的線上遊戲經驗，這些閱讀、實戰與討論經驗的目的是引導老師深入思索現代科技帶來的機會與挑戰，轉為自己的創意英語教學。這一個研究可以呈現出一群台灣的中小學英語老師面對研究所課堂中之 CALL 觀念挑戰之下，如何融合教學現場之現實狀況，建構出屬於自己的知識與課室教學實務。研究發現有四種狀況：第一種是非常主動積極的行動派老師，努力地根據某個學到的概念設計她們此後的教學，步驟清楚周到，然而這教學行動並不一定就等同於她所敘述的學習成果，也與學習者為中心的思維不同。第二種老師的連結方式是藉著新知重新思考過去的 CALL 經驗，設法增色或修正過去的實務。第三種老師則是志在蒐集整理 CALL 教師訓練課程所教的內容，以待不確定的未來有需要時可拿出來使用，給人過門而不入的感覺。第四種老師則有很多猶豫或現實面的考慮，造成建構知識或思考教學應用時之綁手綁腳，無法發揮新知識或新科技之特色。研究設計深入分析老師的知識建構狀況，並期待對新時代英語老師的 CALL 學習歷程有更進一步的認識。

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ABSTRACT

Behind CALL teacher education (CTE) there is an unproblematized consensus of transfer, which suggests a positivist and tool-centered view of learning gains that differs from the sociocultural focus of recent teacher education research. Drawing on Beach's (2003) conceptualization of transfer as *consequential transition*, this qualitative study seeks a cross-contextual understanding of language teacher learning with digital technology as the teachers in this study moved from a CTE course back to their own teaching contexts. Near the end of a CTE course, 19 in-service language teachers were asked to build connections between their experiences in the course and their teaching by creating a presentation. Four types of connections were identified, including thoughtful action planning, past experience refinement, and limited and reluctant use. In-depth interviews eight months later with four of the teachers found that they could seldom use the tools in the ways they had planned. However, they each experienced consequential transition as they struggled to reflect on their CTE course experience in everyday teaching. These results challenge the view that transfer in CTE must be about using technology. It is suggested that a focus on critical reflection of technology use may encourage teachers to continue reflective engagement in the ever-changing and complicated digital learning and teaching context.

Keywords: CALL Teacher Education, Language Teaching Knowledge Construction, Language Teacher Professional Development

INTRODUCTION

One feature of computer assisted language learning (CALL) teacher education (CTE) studies is that there is a high expectation for teachers to actually use the technological knowledge, skills, and tools taught in the CTE courses to achieve transfer (Egbert, Paulus, & Nakamichi, 2002; Kessler, 2007) and classroom integration (Hegelheimer et al., 2004; Hong, 2010, Oxford & Jung, 2007). Hong (2010), for example, directly and clearly stated that “the ultimate goal of CALL teacher education is to enable L2 teachers to integrate CALL technology into their classroom with confidence and knowledge” (p. 53). Technology use as the ultimate goal of CTE is therefore assumed and often accepted as unproblematic.

This emphasis on technology use as the ultimate goal of CTE, however, requires careful examination so that tools do not become the only focus: tools cannot be the only focus. With the rapid development of technology, it makes little sense to simply transfer and use what was learned some time earlier in a CTE class, because newer development often leads to the obsolete of past learning. For example, some earlier CTE courses taught teachers how to make a webpage from scratch (i.e., using html codes). Now, with word processing software, blogs, FaceBook, and course management applications – just to name a few -- one could easily publish information on the web using menu-driven functions without knowing any of the complicated codes and processes behind the scene. Thus, the newer and more convenient technology has made the web-page creation skills not as useful as before. Furthermore, human teachers, working closely with learners, play the fundamental role, not the technology itself. As Seymour Papert, (1990) a pioneer in educational technology who coined the word *technocentrism* based on Piaget's ‘egocentrism,’ put it, “The question is not ‘What will the computer do to us?’ The question is ‘What will we make of the computer?’ The point is not to predict the computer future. The point is to make it” (n. p.).

Thus, instead of expecting transfer to be simply using specific types of technology in specific ways, teacher educators may need to help teachers think more deeply about their attitudes and positions toward technology, particularly at a time when digital devices have already occupied an indispensable part of every day classroom life and when newer ones are expected to emerge at a high speed. If not tools, what else might be useful to help teachers meet the challenges of engaging language learners with the technology? Furthermore, if teachers need to think critically and creatively about how to work with or around barriers that exist now and are yet to come (Hubbard & Levy, 2006), then the ways in which teachers build connections as they move between a CTE class and their own teaching contexts be the focus of investigation.

Current thinking in second language teacher education emphasizes teachers’ ways of knowing as situated, interpretative, and reflective. Teachers are considered “legitimate knower[s], as producer[s] of legitimate knowledge, and as capable of constructing and sustaining their own professional development over time” (Johnson & Golombeck, 2002, p. 3). If this is the case, teachers will be building their own connections during and after a CTE class. In fact, with the prevalence of network computers and digital devices, many teachers entering CTE classes already have rich experience with technology in their teaching or personal contexts, or have existing classroom practices that they could build upon. However, there has been little understanding of how teachers produce personal knowledge as they build on such experiences with their learning from CTE classes.

This study, therefore, aims to develop a cross-contextual understanding of CALL teacher learning: how language teachers build connections with their existing teaching practice during a CTE class and how they engage in a critical review of CALL knowledge afterwards. Most importantly, to what extent do the teachers’ experiences support, problematize, or suggest an alternative to the transfer, tool-centered, and product-oriented assumptions of CALL teacher

learning? The research questions are stated as:

1. In what ways do language teachers build connections and develop pedagogical solutions during a CTE course?
2. Eight months after the CTE course, to what extent has what the teachers learned or experienced influenced their language teaching practice?

LITERATURE REVIEW

Much interest in researching CTE has been observed in recent years, including two dedicated volumes on this topic: Hubbard and Levy (2006) and Kassen, Lavine, Murphy-Judy, and Peters (2007), as well as special journal issues published by *Innovation in Language Learning Technology* (White & Reinders, 2009), *ReCALL* (Guichon & Hauck, 2011) and *Computer Assisted Language Learning* (Thang & Gobel, 2012). Other papers are also published in major journals that routinely publish papers in CALL or second/foreign language education. According to Hegelheimer et al. (2004), CTE studies tend to address two major issues: teachers' views on technology (including their attitudes, assumptions, and beliefs) and transfer from teacher education (including integration and impact). Guichon and Hauck (2011) identified four key topics: (a) how teachers use technologies, (b) what attitudes they hold towards technologies, (c) what counts as competences for teachers to teach a language with technologies, and (d) how they reflect on the teacher education or professional development experiences. It is clear that interest in the effect of CTE is strong and that there has been a high expectation for teachers to use the knowledge and skills learned in a CTE class, preferably, in Ertmer's (2005) term, "high-level use" (p.25), or using technology in a student-centered or constructivist way.

There have been many different conceptions of transfer over more than a hundred years of research (Tuomi-Gröhn & Engeström, 2003), including concepts of transfer that are based on tasks, cognitive processing, situations, social participation, and many others. The underlying theoretical framework for most of the transfer studies in CTE can be considered as classic transfer, which aims for direct transfer of knowledge and skills between similar tasks or contexts. For example, Egbert et al. (2002), one of the most widely cited studies on the transfer of CTE, asked teachers who had taken a CALL class during the previous ten years to fill out a survey. There were also interviews, trying to understand how teachers used the knowledge and skills obtained in the class experience over the years. They identified four separate but related factors for transfer to happen: (a) how teachers learn technology, (b) the interaction between coursework and the classroom, (c) factors affecting technology use, and (d) professional development in technology use (pp. 108-109). Ertmer (1999), on the other hand, argued that well-designed professional development experiences can lead to technology integration. Particularly, challenges related to teachers' beliefs, assumptions, and knowledge levels can be resolved by school-based professional development experiences. Hong (2010) also considered insufficient teacher education to be one factor that can hinder technology use. As can be gleaned from these studies, it is clear that transferring what is learned in a CTE class-to classroom practice is expected, although many contextual challenges are involved. Specifically, sufficient and appropriate resources, materials, on-site support, curriculum flexibility, time, technical knowledge, skills, and attitudes are all crucial for transfer to happen (Egbert et al., 2002).

But, the core of the matter is actually cross-contextual challenges, such as how teachers' agency interacts with the particular context that they work in as they move from the university CTE class to their own classrooms. While in the university CTE classroom, they may develop views that are more consistent with the teacher educator's. But, in the school classroom, teachers would surely have their own views toward CALL that are based more on the particular teaching context they are situated in. Their agency as CTE learners can be very different from that as CALL teachers in the classroom. This does not mean they fail to transfer what is learned in the CTE course; on the contrary, it could be a deeper level of learning.

This thought is inspired by the sociocultural view of transfer. Acknowledging the importance of sociocultural contexts for transfer, Beach (2003) proposed a new conception called *consequential transitions*—critical changes that come about through deep and struggling reflection. Examples of consequential transitions all involve some kind of boundary crossing, such as moving from school to work after graduation, taking part-time jobs after school, experienced teachers responding to educational reform, as well as becoming an apprentice. Such changes often involve identity shifts and have lasting impacts as the individual moves across different contexts and learns to be a professional.

There has not been much research on language teachers' knowledge construction and identity shift as they move from a CTE class to a school context. Many past studies depended on survey or other self-reported data to identify the results of teacher education (e.g., Bai & Ertmer, 2008; Egbert et al., 2002). Other studies employed the case study approach, documenting the course design as well as experience and also using student comments as evidence for positive outcomes (e.g., Bauer-Ramazani, 2006; Hampel, 2009). Fewer CTE studies actually embrace the concept that teachers are agents capable of creating knowledge of their own (Johnson & Golombek, 2002). For example, Slaouti and Motteram (2006) focused on teachers' reconstruction narratives that were reflective and based on "a critical review of an area of interest to the teachers" (p. 89), but the study does not report any products created by the teachers. Chao's (2006) teacher participants created WebQuests, or web-based inquiry projects, in a CTE course for their teaching contexts, but the teachers' consequent development was not discussed. Studies focusing on both teacher-created products in the CTE class and their thoughts developed later in a concrete context would better inform the meaning making process based on the CTE course experience in the teachers' overall professional development. Such studies would also lead to a deeper understanding of what is learned a certain period of time afterwards, when many personal and contextual factors stand as barriers or are perceived by the teacher as affordances.

METHODOLOGY

This study focuses on teachers' perspectives on their learning from a CTE class through the lens of a qualitative case study. Gall, Gall, and Borg (2007) use four features to define case study research: It is "(a) the in-depth study of (b) one or more instances of a phenomenon (c) in its real-life context that (d) reflects the perspective of the participants involved in the phenomenon" (p. 447). As will be described later, these features are also present in the current study: an in-depth study of CTE learning in the natural context focusing first on 19 teachers' presentations during a CTE course, and later on four of the teacher participants' evolving experiences and perspectives. Through layers of data collection and analysis procedures, this study expects to develop an understanding of how the teacher participants made sense of their CTE course experience as they moved across the boundary between the CTE course and their own teaching contexts.

Context and Participants

The context of the study is a summer graduate-level CTE course for in-service K-12 teachers, taken at a university in Taipei, Taiwan. The course focused on multimedia in English language instruction, teaching less the technology skills themselves, but rather more a combination of all the components of technological pedagogical content knowledge, or TPACK, as discussed by Koehler and Mishra (2008) and Mishra and Koehler (2006). In other words, the course aimed to take into consideration the complex interaction among language learning content (i.e., reading, writing, speaking, listening, and others), pedagogy (i.e., communicative language teaching and task-based approaches), and technology (i.e., affordances and constraints of different technological tools). The other emphasis of the course was developing attitudes and skills for teaching English in a learner-centered way while also reflectively meeting the challenges brought by digital media. In addition to CALL concepts and applications, discussions also covered more current concepts, such

as multiliteracy and game-based learning mediated by Web 2.0 social media and mobile devices. (See Appendix for the course agenda).

The researcher was the teacher educator and instructor of this course, while the participants were nineteen practicing K-12 English teachers (18 female, 1 male), with teaching experience ranging from two to ten years. All of them already had experience using computers in the English classroom prior to the class, but mostly with applications such as *PowerPoint*, *Word*, and *YouTube*. In addition, they generally practiced a teacher-fronted instructional style. This CTE class, on the other hand, placed a large emphasis on the concept of learner-centeredness and creative language learning encouraged by new digital media. The differences between the course emphases and the participants' existing practices created a tension; it was within this tension that the teachers were asked to demonstrate how they connect their classroom practices and knowledge development through a presentation at the end of the course.

The Presentation

The requirements for the presentation were stated in an open-ended way:

There is no limitation to the format of your presentations, not even the number of pages, but it must show your efforts to connect your world and the [expected] course content. "Your world" means who you are as an English teacher, your teaching/learning contexts, your needs, and your identity. You are also expected to demonstrate the linkage to the class discussion. It is not something you put together off-handedly before the presentation in order to make do.

Most of the teachers presented projects that they would like to have students engage in using presentation software, such as *PowerPoint*, but others used a word-processing document or a weblog to document their own learning and thoughts. The projects the teachers designed for their students, as well as their narratives on the projects during the presentation captured by videos constituted the data for the first stage of the current analysis. All of the teachers were also required to complete a reflection form after the presentation. The data sources for the first stage of analysis thus include the video presentations, *PowerPoint* slides, word files, or web pages that the teachers used in their presentations, and the completed reflection forms handed in by the teachers at the end of the course.

Eight months after the course, four of the teachers were contacted for a follow-up visit and with their informed consent, we conducted an in-depth interview with each of them. These teachers were chosen mainly because their work represented one of the four types of teacher-made connections identified in the data, including a thoughtful action planner, a past experience refiner, a limited user, and a reluctant practitioner. The purpose of these follow-up interviews was to inquire about teachers' plans and how their thoughts about CALL learning had evolved since the course. The interviews were semi-structured and conducted by graduate assistants with training provided by the researcher. The languages used during the interviews were either Mandarin or English, depending on the teacher's preference. Each interview lasted from 45 to 60 minutes and took place at a location chosen by the teacher. The interviews were captured using a digital recorder and were later transcribed verbatim for analysis.

Data Analysis

There were two stages of the data analysis procedure: first, all the presentations were transcribed, then a constant comparative analysis (Miles & Huberman, 1994) method was adopted to analyze the data. Looking at the videos of the presentations and their transcripts, the researcher and her assistants worked to categorize and identify types of connections the participating teachers made. Through repeated discussions, debate, and comparison and contrast while triangulating among all the other data sources, it was decided that four general types of teacher connections could be

identified. Teachers who had a thoughtful and concrete plan for application were identified as thoughtful action planners. Those whose presentation mainly focused on a past practice and a refinement based on the learning from the course were labeled as past-experience refiners. When the teachers' understanding seemed to have missed the point or made seemingly little connection between the project and the curriculum, we identified them as limited users. Finally, there was a case of reluctant application because this teacher's presentation was brief, appeared to lack preparation, and did not delve deeply into her concerns. Thus, the first stage of analysis yielded seven cases of thoughtful action planning, four cases of past-experience refinement, seven cases of limited use, and one case of reluctant application.

As for the interview data collected eight months after the CTE course, there were also two steps to the analysis. The first was reconstructing each of the four participants' profiles based on their narratives detailing how they used technology when teaching English before and after the course. The second step followed the content-holistic procedure in narrative inquiry (Lieblich, Tuval-Mashiach, & Zilber, 1998) which allowed the study to derive themes through comparing and contrasting the four teachers' experiences. When taken together, both of the analysis procedures helped to address the research questions, the results of which are discussed in the sections below.

RESULTS

As discussed earlier, four general types of connections were identified among the 19 teachers' presentations during the first stage of analysis, and four teachers were visited and interviewed eight months later. They were (a) Athena, a thoughtful action-planner, (b) Pan, a past-experience refiner, (c) Lily, a limited user, and (d) Rebecca, a reluctant practitioner. (All names are pseudonyms.) These teachers' profiles and the connections they made at the end of the course are presented in detail below in order to provide the reader with a concrete idea of how the teachers' thoughts evolved. It is important to keep in mind that these teachers' stories are unique and not to be generalized to the other teachers who were not interviewed. However, their experiences are valuable in terms of revealing teachers' CALL knowledge construction process in context.

Athena: A Thoughtful Action Planner

Athena students were 7th graders who "grew up with the computer." In her presentation, she stated that her goal was to create a learning environment in which students would "learn English holistically and comprehensively" through a CALL project that integrated four skills and took into consideration multiple intelligences and students' diverse learning abilities. She wished that her students would be able to "communicate, express [themselves], cooperate with others, and possess self-learn[ing] ability" (taken from slides). She also hoped they would abandon some of their misconceptions toward the English language, such as taking it as merely an academic subject and not as a real language. Athena's previous experience of assigning a picture book project to her students showed her that they had "difficulty presenting, with obstacles of delivery, [due to] affective factors [i.e., being nervous] and personality reasons [i.e., being shy]." The students' picture book projects also had "few connection[s] to their lives, either [looking] too much [like] a fairy tale or too childish" (taken from slides). Students' posters for promoting a book that they had read also "appeared too wordy and unattractive." Athena seemed to have used many computer tools and project ideas with her students, but she also revealed some dissatisfaction with her students' performance.

To resolve the issue, Athena derived insight from a discussion on game-based learning in the CTE class. In the past she said she had considered computer games as "totally mind-damaging and a great waste of time," involving nothing but lower-level thinking and lots of meaningless mouse clicks. She described herself as "eagerly wanting to see students achieve English competence, overnight." She wished that students would "write well-structured essays, give error-free speaking and confident presentations, show strong motivation and willingness to communicate, and learn English as a

lifelong endeavor.” Through the CTE class, she now understood there were actually new kinds of literacies that students might be acquiring as they played online games. She also saw the wisdom in the guided design of computer games. A guided design model, in her understanding, was when the computer game uses many tactics and small successes to familiarize, motivate, and lull the new player into learning the rules and operations required to play the game. When looked at this way, Athena felt that game design offered much insight for her as a language educator.

Following the guided-design model, Athena, in her CTE class presentation, designed multiple tasks aiming to guide her students through an e-book project. She planned to have her students read a set of young adult novels that depicted lives closely resembling their own. While reading, she would use the opportunity to promote reading strategies such as skimming, scanning, looking at the cover, the book’s back, and the illustrations as she had usually done. Then, students would read the book with an aim to provide both written and spoken reports to the class. The students would work in groups to provide three different endings to the story, all of which had to be consistent with the personalities of the characters and logic of the storyline. The three endings would then be posted on *Facebook* for a class poll. All students would be required to participate in the poll and provide comments. Using the results from the poll, the student teams would decide which of the three endings they would use for their storybook. They would then finish the story using *Photostory*, a tool introduced in the CTE class, and post the story to a designated e-book website. In the process, Athena said she would provide many resources to help the students, including a timeline with important benchmarks for the project, video tutorials for *Audacity*, a sound recording and editing program introduced in the CTE class, and a sample e-book created by Athena herself. At the end of the presentation, she specifically linked her ideas back to the CTE course, carefully elaborating on how her project was consistent with the game concepts discussed in the class. She also discussed expected benefits and challenges of this newly designed e-book project. With the concreteness of the steps and the links between her activity and the CTE class, there seemed no doubt that Athena would implement her plans in the following school year; this is why she was considered a thoughtful planner at the first stage of analysis.

Eight months later, when Athena was interviewed, she had not been able to implement her plan and actually had very little memory of it. She said,

To tell you the truth, it is really difficult to use [the tools experienced in the CTE class] ... because school has its own agenda. You can’t say just because I have learned it I have to use it. ... Students in the third year of junior high ... their grammar lessons are becoming a lot more challenging, and I know they may not have mastered [what they will be tested on] ... Under this circumstance, I cannot have them play multimedia simply because I want to. It is true that there are many things [from the CTE class] I cannot use.

In terms of what Athena felt the point was of learning various applications in the CTE course, she said “I got to know the existence of many applications.” She fondly mentioned her experience working on *Asia Inspirer* (1998) with her colleagues in the CTE class, even though this software was not discussed in her CTE presentation, nor was it actually used in her current teaching. Even though she could not remember the title, and the software was not available at her school, she still found this experience unforgettable. She said it opened her eyes to the possibility of encouraging cooperative learning with the combined force of a piece of software and some print-based materials—a simple idea that was beyond her experience before the course.

Pan, A Past Experience Refiner

Pan was identified as a past experience refiner because she used the insights from the course to review, refine, or build on her past CALL experiences. Having worked in a subordinate capacity within an external research team, she

repeatedly said during her presentation, “I finally understand what I have been doing with a university-sponsored project since two years ago. ... I didn’t know it was something I should actually feel proud of.”

The particular project that Pan discussed in her presentation is called, *Tomorrow’s Classroom*, a computer program that allowed students in her second-grade class to use a touch-screen tablet computer to study math and literacy skills. Usually, she said, it would be very difficult to have a second grader write just one composition in one semester, but in her school it was not difficult for children to write ten. She thought the reason for this was the large number of books in the classroom serving as input as well as the 30-minute silent reading time every morning. “Everybody would be seriously reading. Nobody would be making any sound. The teacher would also be demonstrating silent reading—that’s when I did my own graduate school reading for the past year.” After 30 minutes, the students would use *Tomorrow’s Classroom* to record their reading, including how much and what they read in those 30 minutes, what they think about, and whether they liked the book (i.e., their review). *Tomorrow’s Classroom* then kept and-managed the data, by providing statistic to show group and individual progress which allowed both the teacher and the students to monitor their learning. The program also allowed the pupils to draw on their understanding of the text, consistent with the multi-literacy concept discussed in the CTE class. In addition, classroom activities could be designed to ask students to report their readings to the class or in small groups, or to participate in story-telling competitions. She remarked excitedly, “This activity could literally engage the students in the integrated development of all four skills.”

Pan reported that the design of the program uses the metaphor of a solar system to organize the different user functions according to the hierarchy of the school community: it assigns a particular star for a class, a cluster of stars for a grade level, and several star groups to form a solar system, which represents the entire school. It also assigns tasks for students differentiated according to levels of understanding and packaged in a way similar to missions in a computer game. “For example, you could be a prince and you need to save a princess from distress by solving the assigned puzzles... or as the owner of a restaurant, you need to collect certain ingredients in order to make a curry dish.” The keeping of reading records at the individual level also took the metaphor of a bookstore. Pan said,

When you enter a record of a book that has been read, the book icon would show up in your personal bookstore. Pretty soon you will have a big collection of books in your store with your evaluations and comments. When other readers heed your recommendation, you would earn an amount of token money, which allows you to buy ornaments for your store.

These designs and metaphors did not come easily, Pan explained. She and the other teachers on the team had been attending workshops and meetings every Wednesday afternoon for the previous two years, but she did not understand the importance of these meetings until the CTE course. As to what was discussed in the workshops, she reported that the teachers made suggestions based on their observations and experiences. For example, the program used to provide questions with only two options to choose from as the answer. If the child failed to answer correctly the first time, she could easily figure out the right answer. The teacher team therefore suggested redesigning the questions to give only hints, not the correct answer. If the child still had problems with the hint, the program could give the child similar questions to make sure that she really had developed the expected capability. “That’s the kind of thing we discussed on Wednesday afternoons,” she said.

At the end of the presentation, Pan revealed her regrets. She said she set a strict rule that whenever the computer was in use, nobody should be talking. She would say to her class:

I don’t want to hear a single sound. If you have questions, the program will give you hints. If you still have

questions, go check out the textbook. If after consulting the textbook and there are still questions, please come ask me.

Now that she understood many aspects behind the design of a computer game, and also that the *Tomorrow's Classroom* project was meant to both develop skills and to motivate, Pan explained "I feel that I failed to encourage them to work cooperatively." Pan said that *Tomorrow's Classroom*, the whole project, was actually the result of close collaboration among many different stakeholders on many different levels. Even the parents' voices could be heard and considered during the discussion. "It's just that my teaching strategy was not made consistent with the key principle of the program. ... My own understanding of CALL teaching at the time was insufficient."

Eight months later, when we interviewed Pan again in her school, *Tomorrow's Classroom* was still in use, and Pan was still concerned about cooperation and interaction. She noted:

Before the CTE class I was skeptical. I saw the kids each working on their own and making their own progress, and I was concerned that there would be a certain level of remoteness and coldness among them. ... After the course, my observation shows that this concern may [not be warranted]... It all has to do with personality because some children who are eager about finishing the tasks would actually work closely with their peers to reach their goals. ... Now I know the computer does not stop human interaction. It just makes it happen in different ways.

Another concern was the limitations of the program:

As a teacher, I hope the kids will learn how to figure out the answer by themselves, but the program tends to give it out directly. After the course, I understand that it is the teacher who should design different mechanisms or classroom activities to make sure that learning and interaction happen.

Pan also said, "Technology is not a dead artifact. It interacts with you, and it changes with your thoughts. I developed a totally different kind of thoughts toward the technology in the class." As the only member of the CTE class who was able to engage in the same project she had discussed in her final presentation, Pan's struggle and thoughts were continuously focused on the human aspects of the activity, wanting to understand her students better as they worked on the computer.

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DISCUSSION

Based on the results of the study, there are two assertions to be discussed in this section.

1. The participating teachers seldom used the digital technology neither as they nor as the teacher educator had expected.

The four teachers' experiences demonstrate that the teachers did not often use the tools in ways that the teachers or the teacher educator had expected them to. Consistent with previous studies (Egbert et al., 2002; Ertmer, 1999), the teachers had few opportunities to use the particular tools or applications as they had planned or to use the tools with their learners in a learner-centered way, as had been advocated in the CTE class, unless one had already been engaged in an organized project before the class, such as Pan, the past experience refiner. Transfer did not happen even for Athena,

who was considered a thoughtful action planner at the end of the course and was thought likely to implement her project. Her reason for not implementing her project was that her students had more important goals to achieve (i.e., mastering certain grammar points). This comment suggests that Athena perceived conflicting agendas between the school and the graduate CTE class, so much so that she now considered her project, which was originally highly praised at the end of the course, to be unhelpful for students in achieving the more important learning goals.

For the teacher educator, this response can be disheartening, but it is true that the particular context a teacher works in is going to be much more influential and capable of determining whether or not and to what extent the teacher uses what is learned from the CTE class. In fact, Lily, the limited-user teacher, was confined exactly because she thought about the scarce resources and opportunities that would be available to her while she was taking the CTE course. Taking into account what previous researchers have found regarding the conditions for transfer to happen (Egbert et al., 2002; Ertmer, 1999; Hong, 2010), this result is not surprising. Perhaps CALL teacher educators need to take it as the norm, rather than the exception, that teachers will most likely not use the digital technologies, or at least not use them in the way that is expected. Instead, newer ways of using the knowledge, skills, and tools will emerge, if the teacher is willing.

2. The teachers continuously engaged in deep reflection regarding their interaction with the digital technologies in the context that they teach in, which led to unexpected thoughts, classroom practices, and a change of teacher identity.

If teachers are not going to use the tools or use them in the way teacher educators expect them to, what then is the purpose of taking the CTE course? When asked about the meaningfulness of taking the CTE course, teachers typically gave a “storage for the future” kind of answer, implying that they thought the course did not have a real use. Such answers still justify participating in the CTE course, as it is an opportunity to collect a large amount of information to be used later; information that the teacher could dig up and use when they identify a need in the unspecified future. However, a different and better reason than this was found in the teachers’ narratives.

What was really surprising in the interview data was the depth of reflection and understanding that the four teachers demonstrated eight months after the class, when they were interviewed in each of their own teaching contexts. One such case of reflection was provided by the only teacher that was still engaged in her project eight months after the course: Pan, the past experience refiner, who had been part of a large-scale project team before the CTE class and still was during the time of the interview. During the presentation, Pan said that thanks to the CTE course, she finally understood what she and her team had been doing with the *Tomorrow’s Classroom* over the previous few years. Pan also revealed her concern with collaboration: that students seemed to be working individually and independently in the program. During her course presentation, she said she felt guilty about the ways she had been conducting her class, including not being able to encourage collaboration when the computer was in use. Eight months later, she said she understood how the computer program functions were not a given, and that as a teacher she could help make a difference. Only after time had passed did she understand her own position in the project: she was no longer a passive teacher member who could only take in whatever the computer gave her.

Through reflection, the other teachers also applied the tools and/or concepts discussed in the CTE course in their own ways, although again not as they had expected. For example, Lily, who was considered a memory collector, trying to pack all the knowledge and take it “to go,” turned out to feel continuously inspired by the game discussion. The CTE advocated learner centered usage. That is, the students should be using the technologies in creative projects, not the teacher. However, Lily used the tools experienced in the CTE course more than her students. She used it for preparing her lessons, but she could not have the children use the tools in class as the CTE course had advocated. Given the

limitations of her teaching context—a private language school that did not have convenient computer and Internet access in the classroom, and some of the parents’ disapproval of computer use with small children—Lily’s application of the tools was useful and indeed made her teaching life easier than before. For her, this was a good use of the technology based on a reflection on her context. On the other hand, Rebecca, the reluctant teacher during the presentation, engaged informally in computer games with her students in order to understand the students more and strengthen teacher-student relationships. She also became more confident and excited because of her enriched capability.

These various forms of use were unexpected and developed through time and a deep reflection in the teachers’ teaching contexts. As these forms of practice were not mentioned in the teachers’ final presentations, it is possible to look at these as cases of “transition,” as discussed by Tuomi-Gröhn, Engeström, and Young (2003), which “involves reconstruction of knowledge and skills, rather than merely application or use of something that has been acquired elsewhere” (p. 3). The teachers were able to discuss how their teaching practices and teacher identities had been impacted on multiple levels of complexity. The teachers realized both they and their students were surrounded by new digital technologies, and were willing to examine their previous assumptions as well as attempt new types of teaching practices in order to grow over time and with their students. Particularly, all four teachers mentioned that the discussion of game-based learning had inspired them to reflect on the design of their previous teaching and to provide sufficient scaffolding to help students succeed, just as a game designer would do, including using games as a way to interact with the students on a deeper level. Drawing on Beach (2003), it is fair to say that these teachers actually experienced *consequential transition*. And, interestingly, the transition is not limited to CALL learning environments; it motivates teachers to examine their teaching even when technology is not involved.

This result challenges the conventional view that transfer in CTE must be about using technology; particularly in the ways that teacher educators advocate for before teachers return to their teaching contexts. Based on the four teachers in this study, the experiences that left an impact are related to the deeper reflection of language teaching concepts and classroom practices. A focus on critical reflection of technology use encouraged the teachers to continue reflective engagement in the ever-changing and ever-complicated digital learning, teaching, and living context. This observation resonates with Lawless and Pellegrino’s (2007) contention that “the most important impact a professional development activity can have on a teacher is that of pedagogical practice change ostensibly reflecting a deeper change in pedagogical content knowledge” (p. 595). It is clear that teachers are true agents (Johnson & Golombek, 2002), and they are bound to build and reconstruct their CALL learning in their own ways based on what their teaching contexts provide. Teacher educators may find it useful to think of the result of CTE learning as serendipitous, not as something to be transferred, because the connection is likely to be made in multiple places and in complex forms based on what the teacher’s sociocultural ecology affords and what the teacher perceives to be possible.

CONCLUSION

This study began with a suspicion that transfer may be an inappropriate concept for CTE when examining the impact of CTE curriculum. Informed by Beach’s (2003) conception of *consequential transitions*, (i.e., critical changes that come about through deep and struggling reflection) the study sought to develop a cross-contextual understanding of language teachers’ learning and the connections that they made between their own teaching contexts and a CTE class. Consistent with previous studies (e.g., Egbert et al., 2002), the four teachers interviewed in this study were seldom able to use the tools in the ways that had been introduced to them or that they had planned or expected to, but they were able to continuously review and refine their understanding and practice based on the CTE experience, whether or not the

technology was involved. The reflective engagement that these teachers demonstrated is indeed important for the ever-changing technological context that the teachers work in and should be considered an important objective of the CTE course, if not more so than tool use. It is also important that teacher educators review their own assumptions toward what counts as valuable CALL teacher learning so that they can help teachers develop the necessary skills and wisdom to continuously meet the teachers' contextual needs and challenges.

The study addresses a need for language teacher educators to rethink the goal of CALL teacher education. As digital technology continues to develop and become an indispensable part of everyday classroom life, teacher educators can no longer expect teachers to simply use what was learned from a CTE course in a way that could be anticipated. The results from the study strengthen the view that teachers are agents of their learning and their classroom practice (Johnson & Golombek, 2002) and that CTE courses need goals other than the simple transfer of tool use. Although it is still important to engage teachers in experiencing emerging tools and exploring how the tools may be used in language education, teachers also need to be inspired in a CTE course. The experiences reported here suggest that engaging teachers in critical examinations of their positions toward issues of digital media may lead to continuous reflection on CALL pedagogy long after the course. More research is needed to understand the link between CALL teacher reflection, changing pedagogy, and bringing out the best of the language learner of the 21st century.

APPENDIX: Course Agenda.

Date	Part I	Social media and language learning: (r)evolution?
7/9	Pronunciation	Application: <i>MyET</i> (2008)
7/11	Listening/ speaking	Application: <i>PhotoStory</i>
7/16	Multiliteracies	Application: <i>Audacity</i>
7/18	Communicate	Application: <i>LiveMocha</i>
7/23	FB	Application: <i>Facebook</i>
7/25	Online Game	Application: online games, <i>Second Life</i>
7/30	Tandem Learning	Application: Forms of Tandem Learning
	Part II	Mobile Assisted Language Learning (MALL)
8/1	MALL Introduction	Applications: Project-based learning and <i>Webquest</i>
8/6	Dictionary	Applications: MALL functions
8/8	Reading	Applications: <i>Moviemaker</i>
8/13	Writing	Applications: Creative Common, <i>Flicker</i> , <i>Picpick</i> and <i>Toondoo</i>
8/15	Classroom Practice	Applications: <i>Zuvio</i> and classroom response systems (CRSs)

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其他：（以 100 字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性），如已有嚴重損及公共利益之發現，請簡述可能損及之相關程度（以 500 字為限）

本次研究成果已經為 *Language Learning and Technology* (SSCI) 期刊接受，訂於 2015 年二月刊登。這篇文章挑戰過去文獻，以質性個案研究方法深入比較語言教師一段時間前後對 CALL 的觀點變化，獲評審好評。未來進一步的發展，將探究語言教師真正將廣義的遊戲概念用在教學設計時，會有甚麼樣的狀況產生，繼續進行中。

科技部補助專題研究計畫出席國際學術會議心得報告

日期：103年10月31日

計畫編號	MOST 102-2410-H-004-104		
計畫名稱	超越移轉：電腦輔助英語教學師資課程中之知識連結		
出國人員姓名	招靜琪	服務機構及職稱	國立政治大學
會議時間	103年8月10日至 103年8月15日	會議地點	澳洲布理斯本
會議名稱	(中文) 2014 世界應用語言學大會 (英文) AILA World Congress 2014		
發表題目	(中文) 現役語言教師與電腦輔助語言教學教育之知識轉移：個案研究 (英文) In-service Teachers and Their Consequential Transitions from CALL Teacher Education: A Case Study		

一、參加會議經過

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8/16 (六) 回台。

二、與會心得

本次與會，我的重點在與計畫相關之教師發展課題，特別是電腦輔助語言教學教師教育方面。我的心得是認同方面的議題，仍為焦點，值得繼續發展下去。另外，與會期間，各國學者莫不將研究奠基於自己所處的社會文化情境。若能用自己的文化傳統哲理論用來討論質性研究之現象與發現的理論，更具新鮮感與吸引力。這讓我再一次深切體悟，研究必須有屬於我們自己文化情境的獨特性。身為英語教學研究者，我一向都與其他學者一樣，只看國外文獻，只用國外的理論架構來看國內議題，認為這樣才能加入國際學術社群的討論。但是怎麼追國外的理論其實都是惘然，

充其量只是用別人的口水來談自己看到的國內特殊現象。可以想像國外讀者可能也會覺得我們來自亞洲，對西方理論的理解再怎麼樣也不夠深入，不具說服力。這樣的想法，讓我再一次強烈覺得到必須回歸到我們民族的特色與特殊性。雖然我們談的是學習外國語，古代史籍經典談教育，對我們的外語教學，應該還是有解釋力量。而且我們的生活經驗比起其他外國人應該是更能看出古代史籍的關鍵，在與外國人理論交流的過程中，我們應該是責無旁貸地必須討論我們的史籍。但是國內的外語教學學者，都跟我一樣，普遍沒有採用國學作為解釋現象的工具，個人覺得在今天這個國際化的世界裡，國學典籍之討論與引用是非常必要的，否則如何有研究的獨特性。這一點有待國內學者共同努力。

三、發表論文全文或摘要

摘要：The speedy and ever-changing development of digital media could problematize the transfer expectation of CALL teacher education particularly because such expectation seems to leave no room for reasonable rejection of technology use. This study attempts to understand how twenty in-service teachers in a CALL training program built connections and developed pedagogical solutions after six weeks of discussion on and challenges to their existing beliefs in CALL and digital literacies. Multiple data sources are used, including video recordings of the teachers' presentations, interviews, teachers' and the researcher's logs, audio recording of the group discussions, follow-up interviews and site visits. The result from qualitative analysis indicates that before the teachers left the CALL course for their respective teaching context, they had already demonstrated a variety ways of interpreting the CALL class learning experiences. Follow-up interviews reveal that not using what had been experienced in the CALL teacher education course was often a result of informed consideration of the students, the context, the larger educational ecology. It was seldom a diminished self efficacy beliefs or a rejection of the technology itself. The study then provides a discussion on the complexity of CALL teacher learning and an alternative view to transfer as the result of CALL teacher education.

四、建議

謹此提供兩點思考的方向：

1. 本次有不少台灣的學者一起赴會參加研討會，彼此相互照料，且互相以 LINK 聯繫，連未能親身參與會議的國內熟識學者，也都得到我們的現場即時轉播，非常有意義，大家一起討論，有相當多相互學習的機會。今後可加強學者間的合作，考慮在這樣大型的研討會中共同發表論文，將台灣研究能見度提高。
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科技部補助專題研究計畫出席國際學術會議心得報告

日期：103 年 12 月 05 日

計畫編號	MOST 102-2410-H-004-104		
計畫名稱	超越移轉：電腦輔助英語教學師資課程中之知識連結		
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會議時間	103 年 8 月 10 日至 103 年 8 月 15 日	會議地點	澳洲布理斯本
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科技部補助計畫衍生研發成果推廣資料表

日期:2014/10/02

科技部補助計畫	計畫名稱: 超越移轉: 電腦輔助英語教學師資課程中之知識連結
	計畫主持人: 招靜琪
	計畫編號: 102-2410-H-004-104- 學門領域: 英語教學研究
無研發成果推廣資料	

102 年度專題研究計畫研究成果彙整表

計畫主持人：招靜琪		計畫編號：102-2410-H-004-104-					
計畫名稱：超越移轉：電腦輔助英語教學師資課程中之知識連結							
成果項目		量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）	
		實際已達成數（被接受或已發表）	預期總達成數（含實際已達成數）	本計畫實際貢獻百分比			
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	1	0	100%		國內 PACLIC 一篇
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力 （本國籍）	碩士生	1	0	100%	人次	
		博士生	1	0	100%		
博士後研究員		0	0	100%			
專任助理		0	0	100%			
國外	論文著作	期刊論文	1	0	100%	篇	Language Teaching and Technology (SSCI) 論文一篇
		研究報告/技術報告	0	0	100%		
		研討會論文	2	0	100%		日本一篇、澳洲 AILA 一篇
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力 （外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

<p style="text-align: center;">其他成果</p> <p>(無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)</p>	<p style="text-align: center;">無</p>
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	成果項目	量化	名稱或內容性質簡述
科 教 處 計 畫 加 填 項 目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與(閱聽)人數	0	

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

達成目標

未達成目標（請說明，以 100 字為限）

實驗失敗

因故實驗中斷

其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文： 已發表 未發表之文稿 撰寫中 無

專利： 已獲得 申請中 無

技轉： 已技轉 洽談中 無

其他：（以 100 字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限）

本次研究成果已經被 Language Learning and Technology (SSCI) 期刊所接受，訂於 2015 年二月刊登。這篇文章挑戰過去文獻，且採用質性個案研究方法，深入比較語言教師一段時間前後的觀點變化，獲評審委員好評。未來進一步的發展，探究語言教師真正將廣義的遊戲概念用在教學設計時，會有甚麼樣的狀況產生，目前筆者也正在進行這個方向的研究設計。