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以活動理論探討職前教師參與設計電腦輔助語言教學教材比賽的信念與實施

**Exploring the Beliefs and Practices of Pre-service Teachers in the

Participation of CALL Material Design Contest: An Activity Theory

Perspective**

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中文摘要

　　資訊融入教學在國高中及國小老師中已屬趨勢，因此全國性資訊融入教學的教材比賽也蔚為風行，為教師應用科技於教學的努力與專業發展平添獎勵。因此針對相關議題，本研究企圖探討教師參與設計電腦輔助語言教學教材比賽的理念與實施。即便過去文獻中已大量探討教師對科技融入教學的信念，鮮少研究探討教師信念與科技融入教學教材的關聯。

　　以活動理論(Engeström, 1987, 1999) 做理論框架，本質性研究藉由訪談及文件記錄下三位職前教師設計電腦輔助語言教學教材的過程。本研究有三個研究問題，包含(1)教師在電腦輔助語言教學及語言教學及學習的信念，如何反映在參與比賽中設計的電腦輔助教學教材上，(2)有哪些潛在的因素影響教師的比賽參與，和(3)參與比賽的經驗如何影響到教師的信念及教師在教材設計、科技融入及比賽參與上造成的影響。訪談內容將依據活動理論六大因素進行分析，包含「個體」、「欲達成之目標」、「達成目標的媒介」、「個體存在之社群」、「社群內之規則」、及「個體和他人之間的權力關係」。

　　研究結果指出，教師信念對他們設計教材及科技上的選擇有重大影響。在語言教學與學習上的信念有三個要點，包含(1)設計吸引人有趣教材的偏好，(2)讓學習者有參與的考量，和(3)專業知識的呈現。另外，缺乏訓練、比賽規定及繳交作品的期限為造成教師信念與實施前後不一致的主因。按照活動理論六大因素來探討，媒介包含教師信念、訓練及教學和設計教材的經驗。第二，關於達成目標的媒介，兩位參與研究的老師採用多樣的輸入管道以求教材多變化，惟有一位老師因為時間緊迫及傾向使用既有資源而採用較少的達成目標的媒介。第三，至於比賽的環境下造成的社群內之規則，不但讓教師使用科技上有限

制，對教材設計也造成緊張和阻礙。相反的，個體存在之社群提供了支持及正向的幫助。最後，有關個體和他人之間的權力關係，教師在比賽中對於主辦單位屈居劣勢，而權力也因為考量到學習者和使用者及設計學生為主體的活動而部分流失。雖然本研究未捕捉到教師信念上劇大的改變，但也探討到參與比賽對老師帶來正向及負向的經驗。

　　對於教學應用有幾項建議，包含鼓勵教師參與比賽及與之建立合作關係，及製定比賽規則時應納入老師的觀點。

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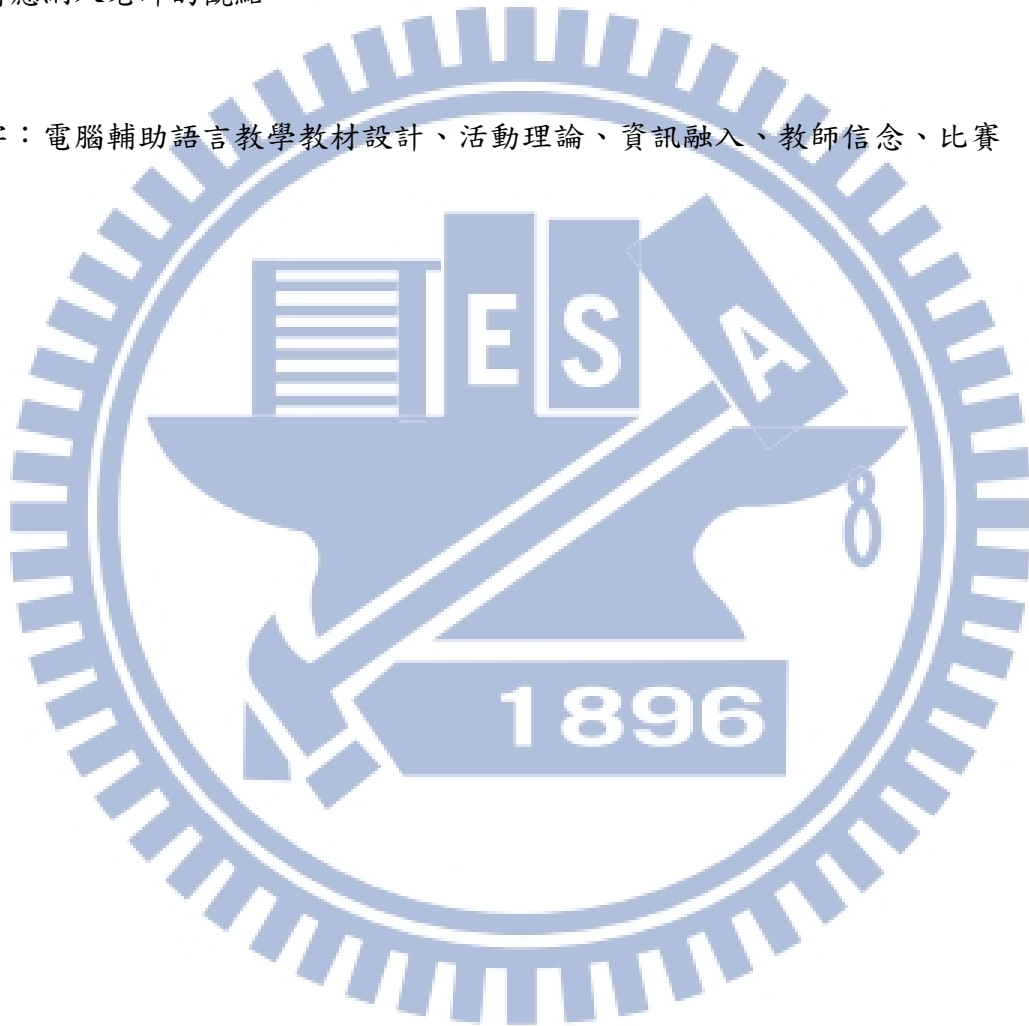
Exploring the Beliefs and Practices of Pre-service Teachers in the Participation of CALL Material Design Contest: An Activity Theory Perspective

Abstract

Integrating technology into teaching has been a trend among K-12 teachers. With reference to such a trend, contests on designing technology-integrated materials encourage teachers' efforts in incorporating technology into pedagogical practice. In this regard, the present study aims to explore the process of CALL material design in contests with the focus on teachers' beliefs and practices. Although teachers' beliefs in technology integration have been addressed in abundant literature, the relations between beliefs and CALL materials have not yet fully addressed.

Drawing on activity theory (Engestrom, 1987, 1999), the qualitative study targets three pre-service teachers and records their process of CALL material design by means of semi-structured interviews and documents. The study addresses three research questions, including (1) how teachers' beliefs in CALL and language teaching and learning are reflected in their CALL material design in a contest, (2) what underlying factors mediated the process of their participation for the contest, (3) how participating in the contest influences teachers' beliefs and teachers in terms of material design, technology integration and contest participation. Interview data was coded into six components in Engeström's (1987, 1999) model of activity theory, including subject, object, mediated artifacts, community, rules, and division of labor.

The findings of the study reveal that teachers' beliefs were influential in their practice. Regarding their beliefs in language teaching and learning, three common themes were found to be crucial, including their preference in creating attractive materials, consideration of involving learners, and their professional knowledge. Additionally, insufficient training, contest regulations and deadline of submission were found to contribute to the inconsistency between teachers'

beliefs and practices.

With reference to the components interplaying within teachers' activity systems, firstly, agency consisted of teachers' beliefs, training as well as experience in both teaching and material design. Second, the mediated artifacts were adopted by the two participants in varying their materials. Interestingly, only one participant adopted rather few mediated artifacts due to her limited time and the tendency to utilize only the available resource. Third, primarily established within the contest, the rules were found to impact teachers' use of technology and cause restrictions to their practice. Conversely, the community such as partner or technical support was suggested to be facilitative to teachers. Finally, concerning division of labor, teachers were at disadvantage to the host institute in the context of a contest. Last but not least, despite no drastic change in teacher's beliefs was spotted, the experience of participating in such contest brought both positive and negative impacts to teachers in terms of material design and technology integration.

Several pedagogical implications were proposed, including the encouragement of contest participation and collaboration with partners, and involving teachers' perspective in constructing contest regulations.

Keyword: CALL material design, activity theory, technology integration, teacher's belief, contest

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CHAPTER ONE
INTRODUCTION

General Background of Technology Integration

In the past decades, the use of technology has become indispensible in daily classroom. With the benefits of technology integration addressed in abundant studies (e.g. Hew & Brush, 2007; Selwyn, 2007), more scholars are interested in investigating how technology can assist teaching and facilitate learning. In recent years, classroom-based technologies such as Course Management System (e.g. Sanprasert, 2009; Thang & Bidmeshki, 2010), interactive white board (e.g. Orr, 2008; Tozcu, 2008), and ePortfolio (e.g. Kocoglu, 2008) have received more attention. As for network-based social computing technologies, virtual world and serious games (e.g. Dierdorff & Watson, 2007; Shih & Yang, 2008), blogs (e.g. Kim, 2011; Sun, 2010), and the latest use of mobile assisted language learning (e.g. Hsu, 2012; Oberg & Daniels, 2012) are also found to be effective in assisting teaching and learning.

With reference to such a trend, it is suggested that computers still play a crucial role in technology integration, with regard to acceptance, adoption or effectiveness for teaching and learning (Golonka, Bowles, Frank, Richardson, & Freynik, 2012). The use of computers in educational practice has been encouraged by the Taiwanese government, with the intention of enhancing national competitiveness and globalization. According to the educational reform entitled 'Nine-year Integrated Curriculum' (Ministry of Education, 2001), information technology (IT) is highlighted as one of six crucial issues. Rather than being simply a subject in isolation, IT is to be integrated into every subject. In addition, the government plan 'General Blueprint for Information Education for Elementary and High Schools' issued by Ministry of Education (2001) suggests that each teacher should spend at least twenty percent of instruction time on the use of computer. Even in more recent years, 'Technology Integration into Teaching Material Development and Evaluation Plan for Senior High School

and Vocational School' has been advocated by MOE (2013), to systematically develop technology-integrated materials and advocate mutual sharing of resources. In the plan, computer-based materials of 21 subjects have been developed and 1746 lessons are available online for teachers. With regard to technology-integrated materials, PowerPoint slides with pictures, the use of videos, webpages, and multimedia software could all refer to as technology-integrated materials in assisting teaching and learning. Furthermore, hardware and equipments such as computers and projectors become more prevalent in the classroom, reaching the replacement rate of 75 percent (MOE, 2013). Such reform and plan indicate that the contemporary educational policy has been shifted to create a more positive environment for technology integration.

Under such policies and educational trend, teachers in Taiwan have also been encouraged to utilize technology in teaching. For example, a large number of computer-based training workshops sponsored by the Ministry of Education (MOE) have been held for teachers. Additionally, contests of designing computer-based materials are also held annually so as to enhance teaching quality, attain curricular innovation, and encourage the use of online resource. Reflecting the above-mentioned current trend, teachers are encouraged to design computer-based materials as one of the ways to benefit student learning. Language teachers are no exceptions.

Teacher Beliefs, CALL Materials and CALL Material Design Contest

In recent decades, abundant studies of Computer-Assisted Language Learning (CALL) have placed their research focus on finding out how CALL can be effectively applied in the classroom (e.g. Thang & Gobel, 2012). However, the success of technology integration in teaching may not just be determined by policies and computer hardware but determined by teachers who play a decisive role in the uptake of technology (Bullock, 2004; Kersaint, Horton, Stohl, & Garofalo, 2003). Previous studies have demonstrated that computers have a

positive influence only when teachers know the ways to use it to enhance student learning (e.g. Angeli & Valanides, 2005; Hsu, Cheng, & Chiou, 2003). Since the importance of teachers is highlighted, more scholars are interested in investigating what teachers think and how they experience when technology is integrated in their lessons. As a result, research on teachers' beliefs and attitudes emerged in literature and their relations with the effectiveness of technology-enhanced teaching are also addressed (e.g. Higgins & Moseley, 2001; Pickering, 2002).

Among the studies investigating the use of technology in teaching, some have focused on teaching materials (Armenteros M., Liaw S.-S., Fernández M., Flores D.-R., & Arteaga S.-R., 2013; Shih, Tseng, &Yang, 2008; Wang & Hsu, 2006). Since teaching materials are one of the vital elements in teaching and learning activities (Shih et al., 2008), it is also necessary to pay attention to the development of teaching materials when investigating language teaching. In the same vein, in terms of specifically technology-enhanced language teaching, CALL materials are worth researchers' attention. Concerning CALL materials, previous research has mainly focused on its evaluation by providing guidelines and inquiring into the learner's perception and needs (Burston, 2003; Chapelle, 2001; Curtain & Dahlberg, 2004; Garcia, & Padgitt, 2003; Gruba, 2004; Rosenbusch & Susser, 2001; Villada, 2009; Zhao, 2003), studies on how teachers develop CALL materials remain scant.

Based on the findings of the studies of teachers' beliefs in CALL and studies of CALL materials, it is suggested that most of previous studies have mainly placed focus on three themes—what teachers believe in CALL, how effectively teachers apply technology into classrooms, and the evaluation of CALL materials.   However, it seems that how teachers' beliefs influence the development of CALL materials still needed further investigation because it was less discussed in previous studies.

Furthermore, previous studies on technology integration have primarily focused on the examination of teachers' classroom practice rather than the investigation of specific events.

Although events such as participating in workshops have been researched, comparatively little research has focused on the event of contest participation. Consequently, the research of technology integration in the event of contest participation could be a field worth to further explored.

Sociocultural Theory

Although teachers' beliefs play a crucial role in shaping technology integration, there are cases in which teachers do not practice what they believe (Ertmer, Gopalakrishnan, & Ross, 2001; Hu &Webb, 2009; Kane, Sandetto, & Heath, 2002). Such inconsistency is found to have resulted from several factors (Beck, 1997; Brinkerhoff, 2006; Cuban, 1996; Egbert, Paulus, & Nakamichi, 2002; Franklin, 2007; Hsu, Wu, & Hwang, 2007). Among those factors, contextual factors, such as limited resources and support, are suggested to be the main barriers which impede teachers from the use of computers into their teaching lessons (Brinkerhoff, 2006; Egbert et al., 2002; Hsu et al., 2007). As the impact of contextual factors on teachers' beliefs is emphasized (Bullock, 2004; Egbert et al., 2002; Hsu et al, 2007; Webb, 2002), Pennycook (2001) maintained that language teaching is associated with broader social, cultural, and political relations. Similarly, Johnson (2006) also embraced the notion that the contexts within which teachers work are influential in deciding how and why teachers do what they do. Meanwhile, she pointed out that L2 teachers are able to make decisions about "how best to teach their L2 students within complex socially, culturally, and historically situated contexts" (p.239). Therefore, examining teachers' beliefs and practice should take a sociocultural perspective into account.

From a perspective of sociocultural theory (SCT), the human mental activity is viewed as a mediated process which is symbolic and socio-culturally constructed (Aljaafreh & Lantolf, 1994). Furthermore, learning is viewed as a situated and mediated process interweaving between individual mind and social milieu (Lantolf, 2000). In a same vein, "teachers' beliefs and practices are continually shaped by their ongoing experiences as teachers, by the values

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and opinions expressed by those around them, and by the expectations of influential others"
(Ertmer, 2006, p.34). Therefore, teachers' interpretation of technology-enhanced teaching
may be shaped by a wider sociocultural context.

Activity theory has been employed as a theoretical framework in the field of teaching and
learning (Hong, Chen, & Hwang, 2012; Isssroff & Scanlon, 2002; Jaworski, 2003; Lim &
Hang, 2003; Williams, Davis, & Black, 2007). As suggested by Mwanza and Engeström
(2005), activity theory entails the quality to "draw the researcher's attention to important
factors to consider when analyzing teaching and learning activities" (P.457). In other words,
activity theory may help the researcher to explore the associated factors when they attempt to
focus on teaching and learning activities. Therefore, activity theory as a framework may be
suitable for the present study in exploring the complex underlying factors associated with the
study foci.

Although literature has investigated teachers' beliefs and practice in technology
integration as well as the associating factors (e.g. Brinkerhoff, 2006; Ertmer, 2005; Pickering,
2002), there are still some areas where more work could be done. First, previous researchers
have mainly paid attention to the effects of teachers' beliefs on classroom instruction with the
focus on general studies such as math, reading and science (Ertmer, 2006). However, a similar
focus on second language or English teaching is not as prevalent in current literature. Second,
although numerous studies have examined teachers' beliefs and their use of technology in the
classroom (Ertmer, 2006; Hsu et al., 2007; Özmen, 2012; Waters-Adams, 2006), the relations
between teachers' beliefs and CALL materials in particular are not thoroughly examined.
Third, although contextual factors may have an impact on teachers' beliefs and practices
(Brinkerhoff, 2006; Bullock, 2004; Egbert et al., 2002; Hsu et al, 2007; Webb, 2002), very
little research has examined those factors from a theoretical perspective of activity theory. To
fulfill the research gap, the present study intended to investigate teachers' beliefs and

experience in developing CALL materials in a contest and capture the associating factors from the perspective of activity theory.

Purpose of the Study and Research Questions

The current study aimed to explore three pre-service teachers' beliefs in participating in a CALL material design contest. Through the lens of activity theory, the purposes of the study were, first to explore their beliefs toward the use of technology and CALL material design in the process; second, to pinpoint the associating factors that might determine their material design and the extent of technology integration; and third, to uncover how the experience of contest participation influences teachers and their beliefs in terms of material design, technology integration and contest participation. The study intended to address the following research questions.

1. How are teachers' beliefs in CALL and language teaching and learning reflected in their CALL material design in a contest?

2. What underlying factors mediated the process of their participation for the contest?

3. How does participating in the contest influence the teachers' beliefs and teachers themselves in terms of material design, technology integration and contest participation?

Significance of the Study

By examining teachers' beliefs and process in the participation of a CALL material design contest from a sociocultural perspective, the study intends to investigate the contextual factors that exert an influence on their preparation and outcome, and how the experience shape their future beliefs in CALL. It is hoped that the study may provide suggestions for teachers and researchers in understanding how CALL materials were designed. Through qualitative data and analyses from the specific perspective of activity theory, the study should be able to:

(1) provide teachers with a better understanding of the process in participating in

computer-based contest

(2) help researchers understand how contextual factors influence teachers' practice of

material design

(3) inform teachers what crucial factors are in play in designing materials

In the next chapter, I review the studies associate with CALL material design, teachers' beliefs in CALL, and activity theory to understand what research areas have been explored and what areas require further investigation.

CHAPER TWO:
LITERATURE REVIEW

The literature review consists of past research with three major themes: CALL material design, teachers' beliefs in CALL and associating factors, and activity theory. Studies of interrelated issues will be discussed according to their relations to the research foci of the present study.

Material Design and CALL Materials

With the increasing attention on material design since the 1980's, the ability to evaluate, adapt, and produce materials was regarded as an essential qualification of an effective teacher (Tomlinson, 2001). In addition, with the aid of modern technology, CALL material design in computer-assisted language teaching and learning has also received strong interest from teachers and scholars. The development of material design and studies on CALL materials are stated in the following sections.

Material design and its development in language learning

Material development was referred to as "a field which studies principles and procedures of the design, implementation and evaluation of language teaching materials" (Tomlinson, 2001, p.66). According to the definition given by Tomlinson, materials include "anything which can be used to facilitate the learning of a language" with different educational purposes (p.66). In the later research, Shawer (2010) offered another definition for curriculum materials, the materials teachers use to approach curriculum. Curriculum materials are sometimes considered to be equal to textbooks; however, textbooks are just one component. Curriculum materials include "any pedagogical input that comprises textbooks, workbooks and teachers' guides in addition to any software and audio-visual materials, which represent an institution's formal curriculum"(p.175).

Aside from the aforementioned definitions, in terms of historical development, material design has gone through a change in theory in the past decades. In the 1980's, materials were merely regarded as examples of methods, as addressed in books such as *Evaluating and Selecting ELT Teaching Material* (Cunningsworth, 1984) and *ELT Textbook and Materials: Problems in Evaluation and Development* (Sheldon, 1987). In 1990's, with the focus switched to principles and procedures of material design, classical publications were published, such as *Materials and Methods in ELT: A Teacher's Guide* (McDonough and Shaw, 1993), *Material Writers Guide* (Byrd, 1995), and *Material Development for Language Teaching* (Tomlinson, 1998a). An effective teacher is believed to possess the ability to design extra teaching materials in addition to course books to bridge the gap between learners' needs and the materials they use. (Sabieh, 2001)

In addition to definitions and historical development, Tomlinson (2001) also listed the different functions that materials could serve. The different functions are as follows. Materials could be (1) instructional in giving learners information, (2) experimental in offering language exposure, (3) elicitative in stimulating the use of language, or (4) exploratory in pursuing discoveries about language use. However, with such features mentioned above, whether mass-produced publications could cater to individual learners' need and suit teachers' teaching need remains doubtful. To address such doubt, creating self-made materials may help solve the problem.

Several scholars have discussed the benefits of creating self-made materials in the field of language teaching and learning (Hutchinson & Torres, 1994; Littlejohn, 1992; Levy, 2006), with elaborations stated as follows. First, by designing self-made materials, teachers can develop materials that match students' individual needs and different learning styles. In addition, it is believed that self-made materials may make up for the deficits entailed by using a course book. Since a course book is universally developed for the majority of the learners, it may not address the needs of all learners with its uniform syllabus and approach, and

superficial coverage of language points (Hutchinson & Torres, 1994; Levy, 2006; Littlejohn, 1992). Moreover, since publishers of commercially produced course books tend to leave out a list of controversial topics such as sexism and racism for economical reasons, the so-called clean, concordant, and benevolent EFL course books (Wajnryb, 1996) are often complained by many practitioners because they are dry and often not able to attain the engagement required for learning (Tomlinson, 2001). Therefore, reflecting the notion that no course book can be perfect for any specific class, Tomlinson (2001) suggested that an effective teacher should have the ability to assess, make adjustment and create materials over and above course book.

Second, another benefit of creating self-made materials is that it empowers teachers and exploits teachers' potential in purist of better teaching and learning. Regarded as a useful way to aid teachers to put theories of language teaching into practice and attain professional development (Tomlinson, 2001), material design offers teachers the initiative and power, which are originally removed because of course books (Hutchinson & Torres, 1994; Littlejohn, 1992). In addition, experiments were executed by some practitioners who produce materials instead of fully relying on coursebooks (Hall, 1995). It is concluded that developing materials enables teachers to play an initiative role as a developer rather than a follower or a course book reader in the classroom. Therefore, with a trend of individualized and adaptive learning, developing diverse teaching materials to suit different requirements are what teachers are encouraged to do (Shih, Tseng & Yang, 2008).

CALL materials (CALL design)

In the past decades, with the increasing popularity and prevalence of computers, and less difficulty in attaining internet access, more teachers are apt to integrate computers into lessons, with the advantages for teaching and learning addressed in several studies (e.g. Hew & Brush, 2007; Selwyn, 2007). Coined as *CALL design* in CALL literature, designing CALL materials

is referred to as "the aspect of teachers' competency in developing computer-based materials, tasks or projects in pursuit of teaching effectiveness" (Tseng, 2008, p.17).

Early studies on CALL design put emphasis on providing principles or guidelines for potential material developers (Hemard, 1997; Hewer, 1994; Hickman& Gordan, 1994; Lynch & Horton, 1997; Tomlinson, 1998a). For example, the criteria developed by Tomlinson (1998a) have been recognized as a systematic approach to material development. As the integration of technology for language instruction is increasingly encouraged, the demand for designing suitable CALL materials also continues to grow. Given that practical and well-conceived principles and guidelines are compelling elements in design process (Hemard, 1998), Sabieh (2001) has proposed a five-unit plan for CALL material designers to follow. The five units are "(1) guaranteeing a learning environment, (2) understanding the educator and computer partnership, (3) identifying the educators and programmers role in CALL, (4) identifying who does what in the development of a CALL program, (5) ensuring evaluation throughout the creation and implementation process" (Sabieh, 2001, p.5-7). Later in 2009, Garatti (2009) has suggested a principled approach to CALL materials with three steps: (1) starting with a clear objective, (2) deciding what medium works best for the lesson, (3) determining what information should be found and what resources can be utilized.

In the meantime, CALL design plays a crucial role in learning effectiveness. According to Levy (2006), three major qualities of CALL design have been identified. First, in terms of the "highly context-bound" characteristic of CALL (Pederson, 1988), material developers should have a clear understanding of the learners' traits and the learning context before their material design (Shneiderman, 1987). In a similar vein, Sabieh (2001) also brought out the notion that by taking students' needs and their course objective into account, the CALL materials could suit teachers' teaching environment. Second, it is believed that design is a creative process of discovering new goals involving dramatic change and receiving feedback from learners. Third, with the occurring strengths and constraints entailed in interaction options, the hardware and

software tools are believed to play an influential role in shaping CALL design.

With the features and approaches of CALL design addressed above, integrating technology into language lessons is believed be feasible in achieving better teaching effectiveness. In order to probe into CALL material design from both theoretical and pedagogical perspectives, several crucial studies on teachers creating CALL materials will be discussed in the following section.

Studies on CALL material

Previous research has mainly discussed CALL materials from learners' perspectives, with the attention on examining how materials help to enhance learners' comprehension and how effectively they engage learners in learning (Cardenas-Claros & Gruba, 2007; Grgurovic & Hegelheimer, 2007; Hsu, 1994; Levy, 2006; Liou, 1997). For instance, Cardenas-Claros and Gruba (2007) examined how help options enhance learner's comprehension on listening materials with the aid of learner-computer interaction. In the English Longman Interactive Program, students were offered help options such as cultural notes and audio/ video control features in their listening practice, with their reflections collected later in an interview. The study concluded that help options could be beneficial in language learning, offering implications that to advance CALL materials, learners' voices could be involved.

Additionally, researchers have also recognized the importance to engage learners in CALL materials (Levy, 2006; Sabieh, 2001; Taylor & Thomson, 1982; Wang, 2007). That is to say, in using CALL materials, attractive multimedia presentations alone do not guarantee better learning. Instead, it is how the learners are engaged with the materials, text, or picture that is truly decisive (Taylor & Thomson, 1982). Wang (2007) performed a course enhancement process that collected ideas from students to modify the course materials. In the study, an asynchronous interaction system was designed for students to voice their responses, recommendations, and advice in modifying materials. In conclusion, the e-learning program

not only encouraged higher student participation, but also helped improve the curriculum by including students' thoughts in course materials.

With respect to exploring teachers' perspectives, studies on CALL materials have addressed the issues of teacher education (Kessler, 2007; Sabieh, 2001), the role of technology in teaching and learning (Egbert, 2002), the effectiveness of using computers in assisting teaching (Sabieh, 2001), the construction of program to shorten design process (Shih, et al., 2008; Wang & Hsu, 2006), and how CALL materials can be integrated in vocabulary and culture instruction (Chujo & Nishigaki, 2004; Garatti, 2009; Kawauchi, 2005).

Teacher training plays a compelling role in combating obstacles encountered in developing CALL materials.   Sabieh (2001) pinpointed that although teachers may encounter two major dilemmas, namely facing the fears and dealing with the time-consuming and frustrating process in exploiting CALL materials, the obstacles could be combated by training and accumulation of hands-on experience. In addition, Sabieh also proposed a plan to train teachers with effective ways to develop and evaluate CALL lessons. Later in a survey targeting TESOL graduates, Kessler (2007) pinpointed that teacher training is decisive in determining teachers' confidence in CALL design as the teacher participants were not as confident in CALL design as in CALL overall. Given that receiving inadequate formal training in material design could be the main cause, the urgency of material design instruction in formal CALL education is thereby addressed.

How CALL materials could be implemented in real classroom has been brought out in previous studies (Chujo & Nishigaki, 2004; Garatti, 2009; Kawauchi, 2005). Garatti (2009) illustrated specific ways culture instruction could be integrated in CALL materials. Contrary to the perceived obstacles of CALL-based culture instruction as "a lack of instructional time, technology skills and the required resources" (p.1), he brought out many CALL-based activities which integrate culture into teaching.   With features such as being up-to-date, authentic, and easily stored and modified for different classes, CALL materials could suit

different learner styles and offer a chance for students to explore the experience different from their real-life experience, such as a virtual tour of Louver. In the end, he concluded that by means of CALL materials, the teacher can release the pressure of being the main source of cultural information.

Teachers' Beliefs and Practice in CALL

In recent decades, scholars have been interested in investigating what language teachers believe and what shapes their beliefs. In addition, abundant research has proved that it is important to explore teachers' beliefs for their significant influence on classroom practice (Aguirre, 1999; Anders & Garner, 1994; Ertmer, 2005; Hsu et al., 2007; Kane, Sandretto, & Heath, 2002; Örmen, 2012; Peacock, 2001). Therefore, numerous efforts have been made to examine the relationship between teachers' belief and practice. Since technology integration has been a trend in language teaching and learning, it is worth discovering teachers' beliefs and practice in CALL and factors associated with beliefs and practice.

Teachers' beliefs and practice in general

The studies of teachers' beliefs and the relationship of those beliefs to instructional practice have mushroomed in the aspect of teaching reading, mathematics, science and literacy (e.g. Hazzan, 2003; Hsu et al., 2007; Miller & Satchwell, 2006). At the same time, it has been questioned to what extent teachers' practices are consistent with their beliefs (e.g. Waters-Adams, 2006; Richardson et al., 1991; Johnson, 1992; Kagan, 1992). Among these studies, some scholars have pinpointed the consistency of beliefs and practice (Johnson, 1992; Kane et al., 2002; Pajares, 1992). For example, Johnson (1992) claimed that clearly defined theoretical beliefs consistently reflect one particular methodological approach and vice versa. Additionally, Pajares (1992) has also supported the notion that teachers' planning and classroom practices are influential in shaping their beliefs. He also pinpointed how the beliefs

developed during the stage of being a pre-service teacher could decide their future teaching behaviors. Similarly, in a study investigating changes in the beliefs of pre-service ESL teachers, Peacock (2001) proposed the urgency of working on mistaken trainee beliefs because they are likely to influence pre-service teachers' future language teaching and learning. Concluding from previous studies, a teacher's beliefs are very likely to be closely related to her consistent teaching style no matter which level or class she teaches (Kagan, 1992).

However, other researchers have discussed the significant gap between teachers' beliefs and practice (Ertmer, Gopalakrishnan, & Ross, 2001; Hu &Webb, 2009; Kane et al., 2002; Richardson, Anders, Tidwell, & Lloyd, 1991). Richardson et al. (1991) conducted a case study which witnessed the inconsistency between teachers' beliefs and practice in teaching reading comprehension. The study indicated that even when the teacher is in the process of changing beliefs and practices, the changes in beliefs were reported to occur before changes in their practices.

The gap between teachers' beliefs and practices could be determined by contextual factors. Hu and Webb (2009) contended that because of contextual factors, the practice of technology remained alien even though teachers knew its benefits. By means of interviews and classroom observation, the study collected the perceptions of seven teachers. It is proposed that conflicts arose from the student-centered pedagogy that accompanied technology implantation and the traditional teacher-centered pedagogy. In conclusion, teachers' beliefs and contextual factors are decisive in the extent of change of teachers' practices in terms of incorporating technology.

Teachers' beliefs and practice in CALL and associating factors

Researchers have emphasized the importance of teachers' beliefs and attitudes toward deciding the degree of technology into teaching (Brinkerhoff, 2006; Kagan, 1992;

Marcinkiewicz, 1994; Pajares, 1992). Although abundant studies have focused on the notion that it is the insufficient teacher education that results in the failure of technology integration, they often ignore the fact that teachers themselves may be the main obstacle (Wong & Benson, 2006).   In a study aimed to investigate factors influencing junior high school teachers' computer-based instructional practice, Hsu et al. (2007) concluded that the best predictor of a teacher's successful practice of technology integration is their beliefs in its effectiveness.   As a result, teachers' beliefs in the effectiveness of incorporating technology in teaching are decisive and consistent to their classroom practice.

Considering specifically the link between teachers' beliefs and practice in technology integration, several factors may contribute to the inconsistencies, including the urgency of classroom management and lesson planning, the effectiveness of teacher education, contextual factors, the effectiveness of technology, previous experience in teaching as well as in designing CALL materials and computer use, and technological skills (Beck, 1997; Cuban, 1996; Ertmer, 2005; Feiman-Nemser & Remillard, 1996; Hsu et al., 2007; Hadley & Sheingold, 1993; Handler, 1993; Oiver, 1993; Sherwood, 1993).

First, the tough and urgent classroom management and lesson planning have left the practitioners less time and energy to consider technology integration (Beck, 1997; Horwitz, 1996; Oliver, 1993). Targeting teachers in Western Australia, Oliver (1993) pointed out that classroom management is a main reason why beginning teachers rated their computer use in teaching lower than experienced teachers. Similarly, Horwitz (1996) suggested that factors such as unruly students, a challenge on their English competence, unfamiliar environment and equipment could cause high pressure. Under such a high-pressure teaching environment, technology integration is certainly not a primary focus. In another study, Beck (1997) also proposed that tasks concerned with classroom management and the shift of teacher's role are far more complicated than the development of technology integration skills. To conclude from the aforementioned studies, the urgent task of lesson plan and classroom management may

leave teachers no time and energy to use technology in the classroom.

Second, much research in technology integration has suggested that insufficient and inapplicable quality of teacher training is another crucial factor leading to the difference between teachers' beliefs and practice (Cuban, 1996; Feiman-Nemser & Remillard, 1996; Hadley & Sheingold, 1993; Sherwood, 1993). Handler (1993) maintained that there is a difference between what teachers are taught about technology integration and what they are expected to use in the classroom. For this reason, fewer than 25 percent of new teachers considered themselves adequately prepared for using computers in teaching, compared to more experienced teachers. Egbert et al. (2002) also pinpointed the fact that although CALL training could enhance teacher's confidence with skills in technology integration and change their attitudes, taking the course alone does not provide sufficient chance to apply and guarantee student's success in learning. In the same vein, Oliver (1993) pointed out that courses with the attention on curriculum applications of the computer can increase later use of computers for teaching more than courses in technical skills in using computer. Therefore, instructing how technology can be effectively applied in class design and real practice is a crucial notion which can not be left out in teacher training in CALL.

Third, contextual factors including lack of time for planning, inadequate resources, and insufficient support are perceived as major obstacles that discourage teachers from using CALL-related activities in the classroom (Egbert et al., 2002; Hadley & Sheingold, 1993; Hsu et al., 2007; Sherwood, 1993). According to a sociocultural theory, human beings can not be exempt from the influence of their context. In everyday teaching environment, teachers need to compromise between beliefs and real-life constraints. Among recent studies, qualitative studies in particular have emphasized the importance of localized contextual factors (Bullock, 2004; Lam, 2000; Strehle et al., 2001). In addition to time, resource and support, Ertmer et al. (2001) identified the importance of other contextual constraints such as curricular requirement, and social pressure from parents or administrators as teachers' explanation for the gap

between their belief and practice. In the later study, Hsu et al. (2007) also identified the school's ability to acquire technical and personnel resource as the factors influencing technology integration in their classroom. Moreover, Bullock (2004) suggested that sufficient support is decisive in the use of technology. In his study examining relationships between intern teachers and their instructors, insufficient support caused a pro-technology teacher refuse to integrate technology, while sufficient support encouraged the initially resistant teacher to use technology regularly. Furthermore, educational policy has also been identified as another crucial contextual factor. For example, educational policy was pinpointed as one of the predictors on factors influencing the use of CMC for teachers, suggesting that educational policy can measure to what extent teachers are willing to use technological innovation in their practice (Brussel, 2001).

Finally, lack of computer technology in learning experience may prohibit teachers from incorporating technology in teaching, left alone designing CALL materials. In a study targeting 72 elementary teachers, Evans-Andris (1995) concluded that a lack of computer technology in their learning experience gave rise to their doubts about the use of computer. According to the study, more than half of the participating teachers avoided using computers while some of them viewed computer lab visits as an aimless activity. Furthermore, a case study conducted by Lillian and Phil (2006) also seconded the notion that technical skills in computers may influence teachers' confidence and success of technology integration. Under Hong Kong educational policy where technology integration was encouraged, the English teachers allocated 20 percent of their teaching to CALL activities in their classroom. However, teachers' lack of expertise in computers and learning to use computers at a relatively old age contributed to not only technical problems, but also their frustration and loss of classroom control. Therefore, since incorporating technology in teaching seems to be a challenging yet fruitless mission under the aforementioned constraints, teachers may be inhibited in doing extra work.

Theoretical Framework: Activity Theory

Over the past few decades, Vygotskian theories have influenced teaching and learning in various domains, such as mediated mind, activity theory, private speech, zone of proximal development and situated learning (e.g. Aljaafreh & Lantolf, 1994; Coughlan & Duff, 1994; Donato, 2000; Dunn & Lantolf, 1998; Lantolf & Frawley, 1985; Lave & Wenger, 1991; Zuegler & Miller, 2006). Among the above works, activity theory has constantly been used as a framework for understanding human activities in their context and offers a set of perspectives for linking social and individual worlds (e.g. Hong, Chen, & Hwang, 2012; Lei, 2008).

Acknowledged by Leont'ev, socio-cultural theories and activity theory are closely related to each other in several ways. As people are compelled to behave in a pre-specified way, their disposition is interpreted to arise from motives, which are culturally constructed (Harre & Gillett, 1994). With the goal in mind, people would pursue a course of actions to realize the goals. Therefore, Wertsch (1998) brought out the basic unit in illustrating human activity as "agent-acting-with-meditational-means." Such notion is represented by the Vygotskian triangular diagram shown in Figure 2.1. where subjects use mediated tools and artifacts to aid them to achieve the goal and work on the object. While describing the diagram, Wells (2002) suggested that "human on most occasions interpose a mediating artifact between themselves and the object of interest, thereby enabling them to act more effectively" (p.46).

Artifact

Subject Object
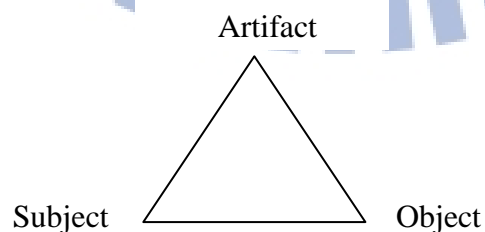
Figure 2.1 Vygotsky's Meditational Triangle (Vygotsky, 1978, 1987; Wells, 2002)

Fully interpreting elements associated with human activity, Engeström (1987) developed an expanded triangle, which is shown in Figure 2.2. According to Lantolf and Thorne (2006),

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this third generation of activity theory provides an appropriate and more complicated

framework in analyzing learning processes from the perspective of mediated artifacts,

embedded rules, situated community and division of labors. The definition of each component

is stated as follows (Lantolf & Thorne, 2006). A subject is "an individual or group whose

agency is the focus of the analysis" (p. 222). An object refers to "the orientation of the activity

and arises from the motive for an outcome or result."   In terms of rules, they describe "the

regulational norms which afford and constrain the goings on within a functional activity

system (p.223). As for community, it is "the participants who share the same object that

shapes and lends direction to the individual and shared activity at hand (p.223). Finally,

division of labor means "the horizontal actions and interactions among the members of the

community and to the vertical division of power and status" (p.223)."
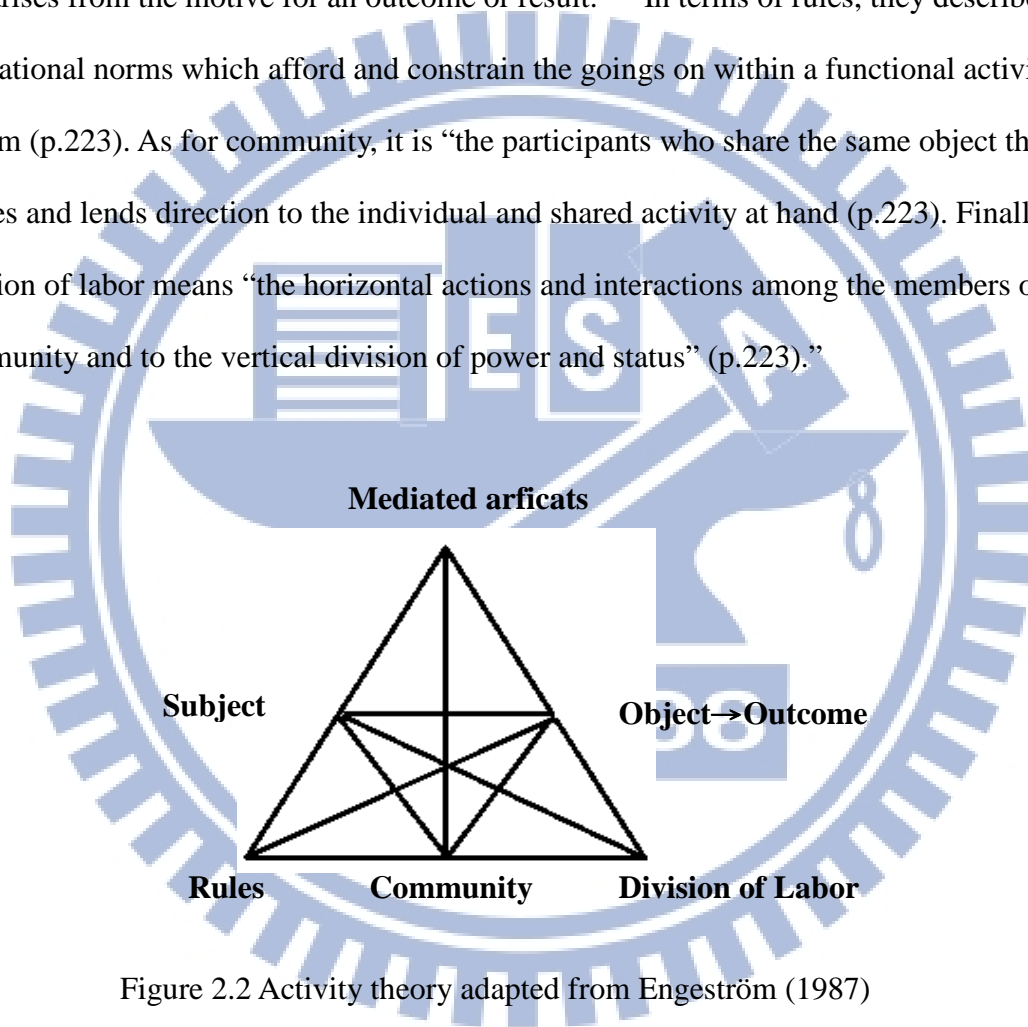
Figure 2.2 Activity theory adapted from Engeström (1987)

According to Wells (2002), one of the features of the model is that it alerts people of

tension and potential breakdown. That is to say, in an educational context, tensions are the

norm in any established activity system. Therefore, an activity system is described as "a

virtual disturbance and innovation-producing machine" (p.47).   Similarly, Engeström (2002)

also mentioned that activity system is constantly working through contradictions within and

between its elements. In this sense, as contradictions or tensions are inherent in an activity

system, the six components above are by no means fixed. Instead, they may undergo constant changes as a result of the interaction among elements.

Activity theory in teaching and learning

Studies of activity theory in learning and teaching have mushroomed in the field of Information and Communication Technology (ICT), investigating issues in ICT integration process in classroom (e.g. Demiraslan & Usluel, 2008; Hu & Webb, 2009; Park & Bracewell, 2007). Also, in recent years, activity theory has been employed in research on a variety of socially embedded practices, such as the use of technology in high education (Issroff & Scanlon, 2002; Mlitiwa, 2007), the design of online learning activities (Barab, Schatz & Scheckler, 2004; Levy, 2008), technology integration (Koszalka& Wu, 2004), and the use of online social networking in high education (Hamid, Waycott, Kurnia, & Chang, 2010).

Issroff and Scanlon (2002), for example, adopted activity theory to examine the use of technology in enhancing learning in high education. Two case studies represented contrasting uses of technology: one using ICT to teach students at a distance and the other using the website to offer resources in line with lectures on a conventional course. From questionnaires and assessment materials, the findings in the first case study indicated that the requirements to post a message are intimidating to students who view the action as publishing their view, not starting a discussion. Therefore, contradiction was spotted between the idea of students as novice and senseless learners and the idea of their tutor, who wanted students to spur discussion. The second case study also pinpointed contradictions through interviews and questionnaires. Although the website gave access to original documents and images related to the lectures, contradictions arose when some students merely printed out the materials, having little electronic literacy to utilize the resource online. In conclusion, although this study applied activity theory to investigate the use of technology in high education, the major feature of this framework seem to "highlight the problematic features instead of focusing on

the benefits" (Issroff & Scanlon, 2002, p. 83) of the new technology. It was suggested that

activity theory is more valuable for understanding what went wrong instead of doing

predictive work (Nardi, 1996).

Another study by Basharia (2007) employed activity theory to examine a WebCT bulletin

board collaboration among English learners from Japan, Mexico and Russia, with the

purpose to improve students' language use and intercultural awareness. After 12-week long

interactions, contradictions within an activity system and among activity systems were

identified as three groups, including a) intra-cultural contradictions (such as to post or not to

post), b) inter-cultural contradictions (such as clash of topic choice, resulting in negative

attitudes among some students), and c) technology-related contradictions (such as message

overload). It was proposed that "inter-cultural contradictions were the result of having the

same task – online collaboration – but engaging in different activities" (Basharia, 2007,

p.95), which echoed to the previous study exploring how the same task is carried out

differently through available tools across different sociocultural contexts (Thorne, 2003).

Although activity theory was employed as a theoretical framework, the primary focus of the

study was to identify the contradictions in collaboration without probing into what the six

components were in the activity system.

Furthermore, Demiraslan and Usluel (2008) investigated ICT integration process in

Turkish schools through the lens of activity theory. Targeting two teacher participants in

different schools, the study collected data through interviews, video records, and observations

to record the process of ICT integration in classroom. Using the six components (subject,

object, tools, rules, community, division of labor) in activity systems, the researchers

examined the interactions among ICT, individuals, and the context in which the activity was

realized. The findings indicated that although factors such as the access to technology,

inflexible timetable curriculum, and support of the school administration were pinpointed to

be influential, it was the teacher's attitude and skills that determined the effectiveness of

technology integration. Drawing on activity theory, the study revealed what the six components in the activity systems were and how the components interacted with one another in the activity systems. Additionally, the study also explored potential factors influencing teacher's practice in the contexts.

Specifically in the field of L2 teaching and learning, as the current trend of education pedagogy has placed focus on the learner, activity theory has also been adopted to analyze language learning with the focus on learners (Basharina, 2007; Lantolf & Genung, 2002; Lei, 2008; Maurino, 2007). Lantolf and Genung (2002), for example, examined power and contradiction of a participant's role in a classroom setting through a theoretical perspective of activity theory. Drawing on activity theory, the study reported one student's transformation of motives and goals. Originally holding high motivation in learning Chinese, the participant was wielded by the authoritative instructor and frustrated by the mismatch between the course content and her goal. She attempted to resist and challenge the circumstance, however, in the end she submitted to the power and became a passive student who merely intent to fulfill her PhD requirement. It was proposed that the conflicts between the participant and the instructor arose in their different learning history. Therefore, in learning a language, the influence of the embedded rules of culture and the community on the learner could not be underestimated.

Additionally, Lei (2008) identified four types of mediated actions in writing strategy use through the lens of activity theory. The study targeted two college students who strategically mediated their writing with diverse resource in writing activities. The adopted writing strategies are categorized into four types of mediated actions, namely, artifact-mediated, rule-mediated, community-mediated and role-mediated strategies. As mediated actions are oriented toward conscious goals, in the same vein, writing strategies are purposefully adopted to attain the writers' goals. As every element in the activity system interacted with other elements, strategies were also found to do the same. As Lei described, "Through the interactions between various types of strategies, the writers were able to mediate their writing

processes and realize their goals more efficiently and effectively" (p.232). Through activity theory, the researcher was able to re-conceptualize writing strategies from a sociocultural perspective.

Activity theory studies of teachers' beliefs in technology integration

Abundant research has investigated how teachers' beliefs and attitudes determined the degree of technology into teaching (Brinkerhoff, 2006; Kagan, 1992; Marcinkiewicz, 1994; Pajares, 1992). Among these studies, some applied activity theory to examine teachers' beliefs in technology integration by teachers who adapted themselves in their teaching contexts (e.g. Hardman, 2005; Hu &Webb, 2009; Koszalka & Wu, 2004; Romeo & Walker, 2002).

Focusing on how primary school implemented Information and Communication Technology in Education (ICTE), Romeo and Walker (2002) incorporated activity theory to determine the views of two teachers, the principal, and IT coordinator in ICTE integration. To identify major commodities and contradictions among participants' perceptions, the six components in the activity system were employed to organize the interview data. It was suggested that a failure of a shared vision resulted from the decision-making process and the unequal power possessed by the participants. Therefore, it was concluded that in incorporating a new technology, it is important to "recognize the views of members in its community" (Romeo & Walker, 2002, p.331). Through the lens of activity theory, the researchers were capable of locating the implementation of new technology within the broader milieu of the school.

To understand how four teachers use technology to mediate their teaching of math in primary schools, Hardman (2005) incorporated activity theory to investigate teachers' perceptions in contexts of the traditional lesson and computer lab. The six components in the activity systems were employed to analyze the interview data. As teachers viewed the computer as a tool to motivate students, the links between tools and objects in the systems

were highly emphasized. Through activity theory, the researchers were able to understand how different tools across different contexts impacted on teachers' practice.

Similarly, Murphy and Manzanares (2008) explored the perspective of teachers who had transitioned from classroom-based to web-based classroom contexts. The findings revealed that the contradictions across the contexts were associated with four factors, including time and workload, physical presence, interaction and rapport building, and use of direct messaging and email. Since mediating tools such as body language and facial expressions were no longer present in virtual classroom, teachers were required to make change in their practice. This coincided with the notion that contradictions may not only result in tensions but also transformation in activity system.

Examining specifically how teachers' beliefs and practice in ICT integration were associated with contextual factors, Hu and Webb (2009) adopted activity theory to investigate seven teachers' implementation of technology in China. The study identified conflicts between two styles－the traditional teacher-centered teaching style and student-centered style in technology integration. It was suggested that contradictory beliefs arose when teachers struggled between benefits and drawbacks of technology. Based on the findings, contradictions not only arose in subject and rules respectively, but also in four links between elements in activity systems. Finally, contextual factors were highly emphasized for "the extent of change of teachers' pedagogical practice when ICT is introduced depends on teachers' beliefs and a range of contextual factors" (Hu & Webb, 2009, p.157). The study not only identified what each component in the activity system was, but also analyzed the relationship within and between elements in the teachers' activity system.

The abovementioned studies might provide the following fruitful implications for the present study. First, activity theory is suggested to be a workable protocol in examining teachers' perceptions and practice in different contexts. In addition, through the lens of activity theory, the six components in the activity systems could be used to analyze the data

and discuss the relationship within and between elements in activity systems. Second, the studies have captured what factors contribute to the contradictions in using the new technology, providing guidance to the present study which aims to explore what contextual factors contribute to difference or similarity of the outcome.

Based on the literature reviewed, the present study aimed to examine the process in which teachers design CALL materials and explore the complex relationships of contextual factors through the lens of activity theory.   In the next chapter, the research methodology in the study will be introduced in detail.

CHAPTER THREE
METHODOLOGY

This research adopted qualitative case study methodology. In this chapter, I will introduce the research setting, two contests in the study, the selection of the participants, the data collection, procedure of the study, and data analysis.

The Research Setting: CALL Material Design Contests

The present study encompassed two contests which fit the following criteria. They were two major national contests well-known to teachers, and they were both hosted by government institutes so the contests were perceived as having credibility. The host institutes and titles of the two contests are stated as follows. Hosted by *Digital Archives*, the project which aimed to establish electronic databases, Contest One was entitled *Digital Archive and Digital Teaching Activity Design Contest* as shown in Fig. 3.1. Contest Two was hosted by the Taipei Education Bureau and titled *Taipei City Multimedia Material Design Activity for K-12 Teachers* as shown in Fig. 3.2.

Figure 3.1 Screenshot from the official website of Contest One

Figure 3.2 Screenshot from the official website of Contest Two

The description of Contest One is stated as follows. First, In terms of time frame, it lasted for four months, starting from July 2009 to October 2009. Second, as for the guidelines and regulations, it specified the necessity of website design and a requirement to utilize information from their official website *Digital Archives*. Third, in terms of qualifications for participants, Contest One admitted anyone who had taken secondary education program.

With reference to Contest Two, the information is illustrated as follows. First, in terms of time frame, Contest Two lasted for two months, starting from July 2009 to August 2009. Second, with regard to the guidelines and regulations, Contest Two demanded elements of audio, pictures, videos, animation, and text to be integrated into the material. Third, concerning qualifications for participants, Contest Two specifically targeted intern teachers or in-service teachers. Table 3.1 shows the description of the two contests.

Table 3.1

Description of both contests

Category	Contest One[1]	Contest Two[2]
1. Time frame	July 2009-October 2009	July 2009-August 2009

2. Sponsoring organization	Digital Archives	Taipei Education Bureau
3. Types of teaching material	Web design, incorporating elements from a fixed resource	A combination of audio, picture, clip, animation, text into teaching material
4. Qualifications	Anyone who had taken secondary education program	Either intern or in-service teacher

Note 1.*Code Contest One= Digital Archive and Digital Teaching Activity Design Contest
Note 2.*Code Contest Two= Taipei City Multimedia Material Design Activity for K-12 Teachers

Participants

Since to access in-service teachers remained difficult for the researcher because the researcher had not been acquainted with in-service teachers at the time of data collection, the study recruited three English pre-service teachers who studied in or graduated from the same graduate-level TESOL institute with the researcher in a public university in northern Taiwan. Although selected out of convenience sampling, the three participants all demonstrated common characteristics. First, they all received professional education in a TESOL program. It is suggested that teachers who have taken teacher education program will better establish their beliefs about teaching (Florio-Ruane & Lensmire, 1990; Wilson, 1990) and these beliefs may be reflected in their practice. Since receiving formal training was one of the factors influencing participants' beliefs, it was preferred to recruit participants who have taken TESOL professional courses. Second, they all took a CALL-related course for one semester and had the experience of designing CALL materials in their course assignments. It is maintained that preparation for technology integration and design learning experience are required for teachers (Duncan & Barnett, 2009; Halttunen, 2002). Based on this criterion, the participants were equipped with basic knowledge and experience in creating CALL materials. Third, they all reported to target senior high school students as potential learners due to their goal to become full-time high school teachers. Finally, although they designed materials with

the goal to win the contest, they all claimed to continue utilizing the materials in their future

teaching career.

To assure the confidentiality of the participants, the participants were coded as Participant

A, Participant B and Participant C. Their demographic information is shown in Table 3.2.

Table 3.2

The participants' demographic information

Participants	Participant A	Participant B	Participant C
Gender	female	female	female
Age	early 20s	mid 20s	mid 20s
Employment and educational status	TESOL graduate student	intern teacher	intern teacher
Location	Hsinchu	Taipei	Taoyuan
Years of part-time English teaching experience	7	7	8
The contest they participate in	Contest One	Contest Two	Contest Two

The three female participants were in their 20s and resided in northern Taiwan.

Concerning their employment and educational status at the time of data collection (July 2009),

Participant A was in her first year of training in graduate school. Participant B attained her

MA degree in TESOL while Participant C still worked on her thesis after completion of her

TESOL course studies. Both Participant B and C were in their internships in secondary

schools at the time of data collection. In terms of their experiences of teaching English, at the

time of data collection (July 2009), Participant C had taught English as a part-time teacher for

eight years while Participant A and B had seven years of part-time English-teaching

experience. All of the three participants had taught students with ages ranging from

elementary school to senior high school, either as tutors or part-time cram school teachers.

Due to status limit of the contest regulations, Participant A participated in Contest One due to her status as a graduate student; Participant B and C chose to participate in Contest Two.

Data Collection

Two major sources of data were collected, namely, semi-structured interviews and documents. Qualitative data of the present study was primarily based on semi-structured interviews, and materials designed by teachers were data that supported the analysis of the interview data.

Semi-structured interviews

Since the participants were located in different cities, interviews with each participant were conducted online by means of an MSN chatting program. Lasting from 60 to 90 minutes, each interview was audio-taped for later transcriptions with notes taken by the researcher during the interview. Throughout the interviews, Mandarin was used to guarantee mutual understanding for the researcher and the participants.

Since Participant C was constantly busy and thus had difficulty in arranging interviews for extended periods of time, fewer interviews were conducted with her than with the other two participants. During the contest preparation, there were five interviews conducted with Participant A and B, and four interviews with Participant C. In the first interview, the questions probed into the following aspects: (a) participants' demographic information, (b) prior teaching experiences and teaching philosophy, (c) beliefs about CALL and material design, and (D) ideas toward the contest, and the perceived difficulty. (See Appendix B)

Later, Interview 2, 3 and 4 were conducted every two weeks for participants to report their ongoing progress. Each interview consists of five parts. (See Appendix C)   In the first two parts, the participants were required to describe (a) the process of material design, (b) the

material they had designed, and (c) the reasons for any decision-making. In the third part, the

participants were asked to report whether the present work had reached their original goal. If

not, the participants could state reasons for their change of plan. In the fourth part, the

participants were asked to report if they had encountered any difficulties and how they coped

with such difficulties. Finally, participants were asked to reflect on their periodical experience

of material design. Interview questions might be added or deleted based on one individual

participants' answers and previous responses. Additionally, the researcher conducted

Interview 4 right before the submission deadline of the contests, in order to determine whether

time limit was a crucial factor for the study. Only Interview 2 and 3 were conducted with

Participant C, since she had less time for interview.

The final interview was done after the results of the contests were announced in mid and

late November 2009. The participants were asked to clarify their thoughts toward (a) the

effectiveness of CALL materials, (b) the experience of creating CALL materials, (c) what

underlying factors are influential in the process, and (d) the experience of participating in the

contest.

Lastly, to obtain more sufficient information about the factors in shaping teachers' beliefs,

their ultimate goals at the time of data collection and details in their division of labor, the

interviews for further clarification were conducted in July 2013 for further clarification.

Documents

In addition to interviews, documents including materials designed by each participant

(some of which were completed at different periods of time) and the regulations and

guidelines offered by each contest were collected (See Appendix D). Based on the materials

they designed, the researcher not only derived more detailed interview questions but also

examined the connections between the teachers' beliefs and their practice. Furthermore, the

final products of their CALL material design served as significant documents for the

researcher to examine how their beliefs were put into practice in their materials. With reference to the documents, the researcher was able to use them to triangulate the analysis of interview data.

Procedure

The data collection was conducted from July to December 2009; details of the procedure are shown in Table 3.3.   In June 2009, before the participants started working on the material, the first interview was conducted to collect their demographic information and their beliefs. From July to August 2009, when the participants engaged in the process, the second and the third interviews were carried out approximately in a two-week interval for the participants to report their progress and general thoughts. The purpose of the interviews is to record the progress of their material design and their changes in terms of perception, if any. In late August and late October 2009, the fourth interview was conducted right before the submission deadline of contest entries. During November to December 2009, a final interview was carried out after the results of the contests were announced. This was done in order to capture their overall thoughts toward incorporating CALL in material design and also to record participants' experience of participating in a contest. Lastly, in July 2013, the researcher turned to the participants for further clarification of their beliefs and ensured the results corresponded to their genuine thoughts.

Table 3.3
Procedure of the study

Time frame	Tasks	Purpose
1. June 2009	Interview 1	Participants' demographic information & their beliefs and experience before starting material design.

2. July-August 2009	Interview 2, 3 – Participant A& Participant B Interview 2 – Participant C	Recording the process
3. Late August 2009, & Late October 2009	Interview 4 –Participant A& Participant B Interview 3 – Participant C	Understanding the process right before the submission deadline
4. November, 2009- December, 2009	Final interview	Thoughts toward incorporating CALL in material design
5. July, 2013	Interviews for further clarification	Clarification of teachers' beliefs and ensuring the results

Data Analysis

As the primary source of data in addition to the materials designed by teachers, the

interviews were first transcribed for the researcher to determine the participants' beliefs in

CALL and CALL materials. Later, documents were analyzed to examine how teachers' beliefs

were connected with the materials they designed. To address the factors mediating the process

of material design, themes emerging from the data were categorized into the six components

in Engeström's (1987, 1999) model of activity theory, including subject, object, community,

rules, division of labor, and mediated artifacts. In the context of the study, each component in

the activity system was operationally defined as shown in Figure 3.3.

■ **Subject:** Three participants and their subject agency such as their beliefs, background

and experience in teaching and material design, and technical knowledge

■ **Object:** Their practice of material design and motives of contest participation as stated

by each participant

■ **Mediated artifacts:** All kinds of artifacts that help participants to achieve their objects,

such as tools, existing CALL materials, related resource in teaching English, Internet,

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and skills in incorporating technology

■ **Community:** Partners, connections and technical support, designers of the past lessons, authors of online resource and books, the teacher in online computer class, a friend who offers help, the award-winning classmate, the judges and competitors of the contest, future teacher recruiters

■ **Rules:** Conventions and requirements in creating material, contest regulations, deadline of submission

■ **Division of labor:** interactions and power relationships with host institutes, partners and potential learners

MEDIATED ARTIFACTS:
All kinds of artifacts that help participants to achieve their objects

SUBJECT:
Participant A, B and C
Their subject agency

OBJECT:
Win the contest and finish material design

RULES:
Contest regulations, conventions in CALL, deadline of submission

COMMUNITY:
Partners, connections and technical support, designers of the past lessons, authors of online resource and books, the teacher in online computer class, a friend who offers help, the award-winning classmate, the judges and competitors of the contest, future teacher recruiters

DIVISION OF LABOR:
Interactions and power relationships with host institutes, partners, teacher users and potential learners

Figure 3.3 Activity system in the present study

Data analysis procedure

First, I analyzed the interview transcriptions and documents within one case to search for the themes associated with teachers' beliefs by using activity theoretical framework. Afterwards, the final products of their CALL material design were examined to see how their beliefs were put into practice. In answering Research Question 1 "How are teachers' beliefs reflected in their CALL material design in a contest", the relationships among Subject, Object and Mediated artifacts were examined. Since three participants were involved in the study, how the teachers' beliefs and the use of artifacts led to their practice were within the scope of data analysis.

Next, I clarified the relations between teachers' beliefs and the materials they had designed to further figure out the factors that might influence the relations. The six components of the activity theory systems were used to code the data. To address Research Question 2 "What underlying factors mediated the process of their preparation for the contest and outcome," how Rules, Community, and Division of labor, Subject and Object interacted with one another will be the major focus.

Third, to answer Research Question 3 "How participating in the contest influenced teachers' beliefs and teachers in terms of material design, technology integration and contest participation," I figured out how this particular event influenced their beliefs and themselves in terms of material design, technology integration and contest participation based on the interview data.

After the analysis of one case was completed, I employed the same procedure to the other two cases. Afterwards, I conducted cross-case analysis by identifying the common themes corresponding to my research questions.

Trustworthiness

The trustworthiness was ensured in the following two ways. First, I conducted interview

before, during, and after the material designing process. During the process of material design, I conducted interviews with a two-week interval in a two-month time frame. Therefore, the collected data was adequate and representative to be further analyzed. Second, to attain transcription reliability and the trustworthiness, member checking technique was employed by offering the participants the summary of the findings to ensure whether it corresponded to the participants' genuine thoughts or not.

CHAPTER FOUR

RESULTS

In this chapter, the three cases are presented individually, including the teachers' beliefs in CALL materials, the descriptions of the designed materials and the interactive relations among components in their activity systems.

Case I: Teacher A

Motivated by winning the reward, the wish of creating her own work and adding values to her resume for future teaching career, Teacher A participated independently in Contest One. As a graduate student at the time of data collection, Teacher A reported to have high confidence in herself to work alone due to her own working style. In terms of contest regulations, Contest One required the creations of webpages and use of resource from a particular website named *Digital Archives*, a government-supported website serving as an electronic database shown in Fig.4.1. Consequently, CALL materials in this case included the creation of teaching webpages, lesson plans for four periods of class and worksheets.

Figure 4.1 Screenshot of the official website of *Digital Archives*

In the upcoming sections, teacher's belief of Teacher A in general, description of her CALL materials, and factors affecting her CALL material design are stated.

Teacher A's Beliefs in General

Belief 1: Language learning should be attractive to learners

"Attractions" were significant for Teacher A as she claimed that language learning was a long-term process in which only attractions could sustain learners' interest and motivation. As she explained, "The attractions I mean here do not refer to something funny or entertaining. If it is content-based, it should let us feel like wanting to read. If it's a method, it should let us feel like using. These are the attractions I refer to."(Interview VII, July 13th, 2013). According to the example raised by Teacher A, compared with reciting the dictionary or taking classes in cram school, learners would learn more effectively and naturally by means of watching English TV series because of the attractions these methods entailed. As she emphasized,

Language learning is a long process. If the methods are attractive, it is easier for people to be successful in it. Take me for example. I often listen to English songs, watch movies and TV series. As long as it is something you feel attracted to, you will learn a lot unconsciously. (Interview VII, July 13th, 2013).

In addition, since language learning could decay without constant exposure, it was difficult for learners to maintain long-term habits and interest in learning if there was not enough attraction in language learning. As she gave another example, "For example, some people might use tedious methods such as reciting dictionary or reading grammar book. They might work hard for at most two to three months. [But after that] they may give up learning and then it [learning] is not enduring." (Interview VII, July 13th, 2013).

Her belief was formed because her own learning experience was strongly associated with attractions. When learning English in high school, the attractions such as listening to English songs and watching movies motivated her to continue learning even after the exams. By contrast, for unattractive subjects like history, since she was forced to study out of test-taking

concerns, its lack of attraction made her quit learning as soon as the test came to an end. To sum up, her belief about language learning was shaped due to her own learning experience and therefore such a belief could be crucial in her future practice.

Belief 2: Language learning should be useful and can be applied to daily lives

Maintaining that learning would be meaningful and motivating if it was useful, practical and could be applied to daily lives, Teacher A believed that students would learn better if they knew the purpose of learning. According to Teacher A, if learning was not practical and could not be used in daily lives, students might question "why" they had to spend time learning and their learning motivation would decline accordingly. As she maintained, "Everyone learns for a purpose…That purpose does not have to be utilitarian. That could be a goal…A person has to know it then she would be able to learn." (Interview VII, July 13th, 2013).

Her belief was shaped due to her previous experience in learning and interacting with foreign friends. First, as a rather rebellious learner in high school, she kept asking herself a lot of "why" questions. For instance, back in her high school, she once questioned her history teacher who did very little teaching but recited the textbook and asked the students to underline the key points. Not knowing the purpose of studying history, she once raised her hand, asking the teacher what learning history was for. Embarrassed as the teacher was, he did not answer the question on the spot but showed his distaste and awkwardness. As she commented, "I just wanted to know what learning history was for. The teacher could tell me any reason for learning history and then maybe I would be convinced…For me, this was something I cared about." (Interview VII, July 13th, 2013).

Second, her belief could also be traced back to her experience interacting with foreign friends. In responding to questions regarding Taiwanese festivals from her foreign friends, she encountered great difficulty in explaining the story of *Lady in the Moon* in English. Consequently, since Teacher A viewed teaching as a chance to learn, her belief that language

learning should be practical and useful was shaped accordingly.

Belief 3: Students learn better in student-centered activities

Believing that students learn better in student-centered activities, Teacher A intended to assign students to work on projects and explore knowledge on their own rather than learn from lectures. Teacher A maintained that in student-centered activities, students could learn ways to cooperate and communicate with their classmates. Learning in this way could go beyond merely language learning and help students to develop their communication ability and problem-solving skills.

Her belief about student-centeredness was shaped by her positive learning experience in college. Back in college, student-centered activities such as tasks and group projects were prevalent in the majority of the courses. Meanwhile, her active participation of projects such as drama performance was found to be beneficial not only in language learning but also in helping her building up self confidence and friendship. As she explained, "By means of participating in activities, I found myself learn more dynamically than I did in classroom learning. So that was why I considered project-based learning to be a great method." (Interview VII, July 13th, 2013). Since learning could be dynamic and multi-dimensional, her belief about student-centeredness was formed as a consequence.

Teacher A's Original Plan in CALL Material Design

In terms of the overall design, Teacher A planned to use "festival" as her central theme and taught learners how to use English to introduce Taiwanese festival. After taking a glance at the assigned website which was full of content-based information, she realized that only by using festival as a theme was she able to utilize the resources which were not directly related to English teaching. In addition, after viewing the award-winning worksheet, she was determined to design worksheets that could be applied to real classroom practice. Concerning

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technology integration, she planned to include pictures, videos, even space for learners to leave a message online on her webpages. According to Teacher A, the webpages were her major CALL materials and a platform for potential learners and teacher users to learn and utilize materials.

Teacher A's Practice in CALL Material Design

CALL Materials—the webpages, lesson plans, and worksheets

According to the contest regulations, the materials had to include at least webpages with the format of html, lesson plans with the must to incorporate information from the assigned website and worksheets. Therefore, the materials Teacher A designed contained webpages, lesson plans and worksheets.

The webpages

Entitled "Happy Chinese Festival", her webpages were decorated in red with focus on the introduction of five Chinese festivals, including Chinese New Year, Lantern Festival, Dragon Boat Festival, the Night of Sevens, and the Mid-Autumn Festival. In addition, four sections on the homepage are introduction of the teaching webpages, extra learning resources, downloads where lesson plans, worksheets, evaluations, complementary materials are available, and references for citing the source of information as illustrated in Fig. 4.2.

Figure 4.2 Screenshot of the homepage of the webpage

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Several features of her webpages are stated as follows. First, in line with her belief about student-centeredness, her webpage provided extra links for students to further explore knowledge instead of merely showing the information. As Teacher A mentioned, "I would not introduce festivals in detail; in this case, if they (students) want to understand deeper, I would provide that extra link, and let them (students)… click into the link and do extensive learning on their own." (Interview III, July 30th, 2009). Therefore, based on her concept, students could learn more when they take the active role and explore the knowledge by themselves. Second, centering on the introduction of five Chinese festivals, the webpages included related photos and videos along with extra links for related stories in both English and Chinese. Since one of the grading criterions is to utilize the resource in *Digital Archives*, the photos as well as the videos were mostly adopted from that website. Third, her webpages were rich in information and stories associated with the festival. In accordance with her belief that language learning should be useful, the materials on introducing festivals in English were very likely to be applied to daily lives. Fourth, the description of her webpage was mainly in Mandarin, which made her webpages seem to be a resourceful database for festivals rather than English-teaching webpages. For any information on her webpages, taking copyright into her consideration, Teacher A cited the source of the information in the back. Figure 4.3 shows the webpages of Chinese New Year.

Figure 4.3 Screenshot of the webpages

Lesson plans

Following the contest regulation, Teacher A designed lesson plans involving the teaching instruction for four periods of class. The major language in her lesson plans is Mandarin Chinese because she claimed that the sample of lesson plans provided by the host institute is in Mandarin. For each class, the lesson plan contained before-class preparation, a warm-up activity, teaching procedure and review activity.

Several features were spotted in her lesson plans. First, corresponding to Teacher A's belief that learning should be attractive, vivid warm-ups and activities were designed. Take her warm-up activity for example. Teacher A used fables and thoughtful stories to draw students' attention. In one class, before asking students to present their concept for the video, Teacher A used two fables as warm-up, guiding students to appreciate compliments and face constructive criticism as shown in Fig. 4.4. In addition, in her lesson plans, instead of writing just descriptions, Teacher A used photos and teacher's monologue to illustrate the activity, making her lesson plan easier for teacher users to follow.
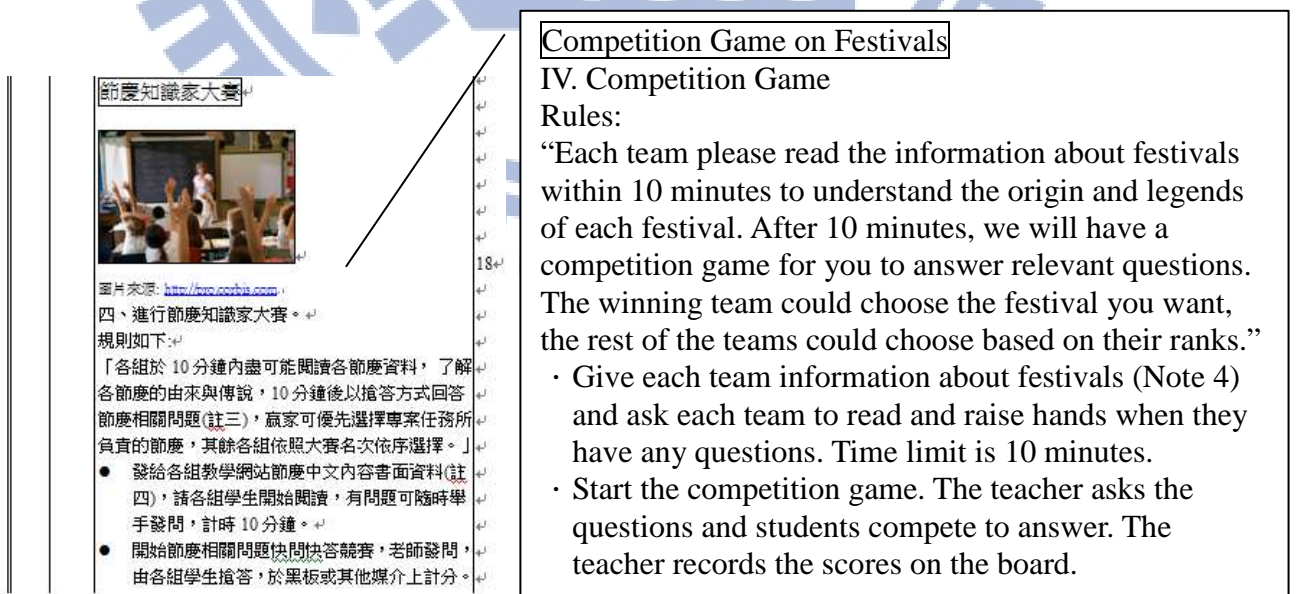
Figure 4.4 The warm-up activity in the lesson plan

Second, in accord with her belief that language learning should be useful, Teacher A paid

extra attention to the viability of her lesson plans after viewing the award-winning materials. As she commented,

> I can tell that some people do pay efforts in designing lesson plans. Because some come up with the files of lesson plans, the worksheets for the activity… That was hard work. But whether it could be applied [in class] or not, I think it might not be [workable]. I want to create something more practical. (Interview I, July 10th, 2009).

Third, from the lesson plans observed, it was indicated that Teacher A's belief about student-centeredness was emphasized as she designed plenty of activities for students to engage in. For example, in one class, provided with stories and origins about the festivals in Chinese, students were asked to read the information at hand in a limited time frame. When the time was up, students would engage in a competition where they raised hands and answered questions to win scores. In the end, the team with highest scores won the competition. Figure. 4.5 demonstrates the activity in the lesson plan.

Competition Game on Festivals
IV. Competition Game
Rules:
"Each team please read the information about festivals within 10 minutes to understand the origin and legends of each festival. After 10 minutes, we will have a competition game for you to answer relevant questions. The winning team could choose the festival you want, the rest of the teams could choose based on their ranks."
‧ Give each team information about festivals (Note 4) and ask each team to read and raise hands when they have any questions. Time limit is 10 minutes.
‧ Start the competition game. The teacher asks the questions and students compete to answer. The teacher records the scores on the board.

Figure 4.5 The activity in the lesson plan

Activity: Project-based learning

Including "project-based learning" in her lesson plans, Teacher A attempted to guide students to create a video to introduce a festival. Unlike the traditional method of teaching which started with a lecture and ended with homework assignment, Teacher A highlighted the belief about student-centeredness.

Based on the design, with technical instruction and guidance, students were able to utilize Movie Maker and create their own video. As Teacher A further explained, "I would like to utilize media in my lesson plans, but it's not like I do everything here and students learn nothing."(Interview IV, August 18th, 2009). After referring to other successful student-made videos on YouTube, she was more determined that the task could be successfully executed by students. Moreover, to ensure equal responsibility, students would be assigned with different roles, including the leader, the video maker, the script writer, the information gatherer, and the presenter. With the aid of worksheets, each student would know what they should do in their roles.

Worksheets

In line with Teacher A's belief about student-centeredness, the worksheets functioned as step by step preparation for project-based learning, helping students understand their jobs and guiding them to plan their next step. Table 4.1 provides the content and purpose for each worksheet. An example of the worksheet is shown in Fig. 4.6.

Table 4.1

Detailed description of the worksheets

Worksheet	Content	Purpose
1. Worksheet A	Assign students to take different roles and demonstrate the responsibility for each role	Help students to take different responsibilities in the project

2. Worksheet B	Assign students to interview their relatives for the stories in each festival	Help students to build up basic knowledge about each festival
3. Worksheet C	Ask students to visit her webpage and write script for their narrator in their video	Guide students to work on their script for the video
4. Worksheet D	Ask students to write down the synopsis and concept for the video as well as the possible difficulty they might encounter	Help students to clarify their plan for making the video
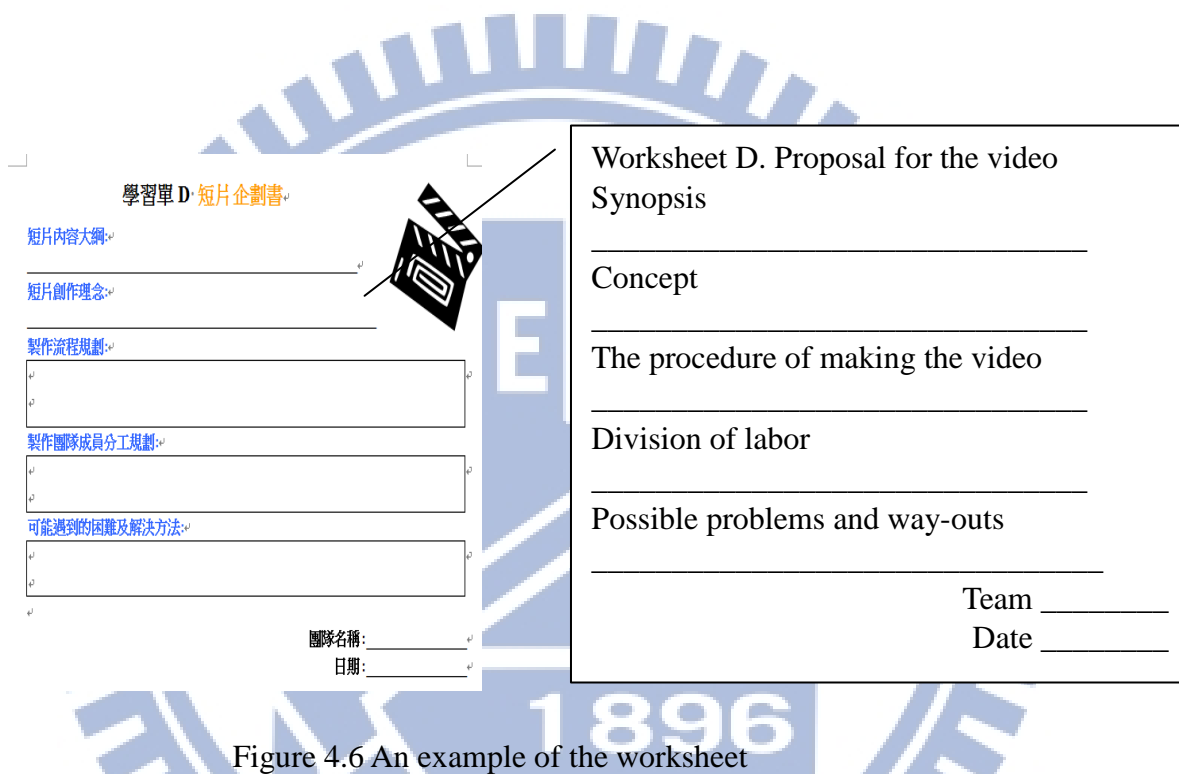
Figure 4.6 An example of the worksheet

The Gap between Teacher A's Beliefs and Practices

Three major differences between Teacher A's beliefs and practices were spotted. First, against her belief that learning should be attractive, Teacher A used unattractive photos and videos from the *Digital Archives* website as to follow the contest regulations, contributing a gap between her belief and practice. Second, the finding revealed that her real practice was more simplified than her original goal as she gave up the use of Camtasia and interactive platform due to a lack of time. Although she contended that her practice could have been more attractive and outstanding, she had to make compromise as to meet the deadline. As she

explained, "Originally the webpage would be added to Camtasia or something novel.   In the end, it [the webpage] became more descriptive without so many fancy tricks because of time." (Interview VI, February 10th, 2010). Third, different from her belief that language learning should be useful and can be applied to daily lives, she realized that adopting resource mainly from *Digital Archives* and the prevalent use of Mandarin on her webpages somehow made her materials less connected to language learning. As she emphasized, "The must to use resource from *Digital Archives* suggested that the use of technology was compulsory. They [the host institute] just wanted to promote their resource without paying much attention to learning effectiveness." (Interview VI, February 10th, 2010).

Components Interplaying within Teacher A's Activity System
Agency, mediated artifacts, object and outcome

In Teacher A's activity system, her wish to win the contest (object) was strongly connected to her goal to find a full-time teaching job and seek acknowledgment (outcome). As she later explained, "Seeking acknowledgement was definitely important. Since I was new in this industry, adding more awards or experience would be helpful to my career." (Interview VIII, July 27th, 2013).

Concerning Teacher A's agency, her experience in editing textbooks as well as her beliefs were found to shape her agency. Since helping editing textbooks required following a set of standardized procedure, the process was repetitive and lack of attraction. Consequently, she was dissatisfied with the overall experience as she recognized the power of designer was deprived due to the limitation. Seeing the experience as restriction and frustration for not being able to apply her professional knowledge in language teaching, Teacher A was more determined to find a chance to implement her ideas into practice. In this regard, in addition to her beliefs, her previous experience in designing textbook formed her agency.

With reference to mediated artifacts, the mediated artifacts served as tools for Teacher A

(subject) to accomplish her practice of material design and achieve her goal of winning the contest (object). Teacher A constantly utilized various ways to achieve her object, inclusive of searching resources from the *Digital Archives* website and surfing the Internet. Since winning the contest was determined by the degree of using resource from *Digital Archives*, Teacher A constantly utilized *Digital Archives* as a major source of information. One of the evidence was that the photos and videos on her webpages were mainly adopted from that website. As Teacher A claimed, "They [the host institute] just want you [me] to use their resource to design lessons. Then there were few wordy descriptions but only pictures and videos in their resource. So I use the photos and videos as warm-ups." (Interview VI, February 10th, 2010). Therefore, the prevalent use of information from *Digital Archives* was facilitative in achieving her object of wining the contest.

In Teacher A's activity system, a bidirectional interactive relations between the mediated artifacts (the Internet and *Digital Archives*) and Teacher A (subject) and her beliefs (agency) were captured. First, her subject was found to be guiding her in utilizing the mediated artifact. Since accomplishing webpages required abundant information, as a frequent Internet user, Teacher A constantly utilized the Internet to find information. For example, while working on her webpage, she simply typed in key words and looked for what she wanted from the results coming up. According to Teacher A, despite working alone, she was contended to have the Internet to help her accomplish materials. As she commented, "It is easy to get information. No matter what problems you have, just go searching and then you will have [the solutions]." (Interview IV, August 18th, 2009). Not only did Teacher A utilize the Internet to help herself with the materials, she also searched the Internet for tips in time management when she was pressed for the deadline. As she said, "Because I am short of time, I look for the information of time control online to push myself." (Interview IV, August 18th, 2009).

Additionally, her use of mediated artifacts had an impact on her agency when Teacher A found out utilizing resource from *Digital Archives* was against her belief that learning should

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be attractive. However, although the information in *Digital Archives* was disorganized, outdated and lack of attraction, in order to win the contest, she had to compromise and make the best of the resource to accomplish her materials.

Contextual components affecting Teacher A's CALL material design

Rules

Among the contextual factors, the rules involving the contest regulations, the convention in CALL material, and the deadline of submitting the works were found to affect Teacher A's practice of material design most.

The contest regulation was seen as a great challenge for Teacher A for it required the contestants to create webpages and adopt resources from *Digital Archives*. Since Teacher A lacked experience and training in creating webpages, she needed to overcome technical problems, which were far more difficult than just write lesson plan. As she indicated, "The greatest difficulty was…when I was about to make it, I have a headache… If it was just an English lesson plan, I can make it…Creating a website [webpage], basically we are not expert in information technology. Creating website [webpage] is a new technique. " (Interview I, July 10th , 2009).

Second, the requirement to utilize resource from the *Digital Archives* website was a huge limitation for Teacher A. As the contest regulation suggested, 40 percent of score is based on the efforts of using resources from *Digital Archives*. Nevertheless, the messy and disorganized organization of the website made its resources inadequate and difficult to find. According to Teacher A, once she typed in the key words "Chinese New Year", and the results she got were messy and irrelevant, including outdated videos, ink painting, poems, even the news of someone getting murdered during Chinese New Year. As she indicated, "There are many things undesirable and it takes time to find [the right resource]. It sucks." (Interview III, July 30th, 2009). Most importantly, she ran into a dilemma when she found out the resource was

mostly centered on areas such as science or history and little connected to teaching English.

During the data collection period, the convention in CALL material involved the creation of webpages with FrontPage and the consideration of copyright. Since Teacher A recognized that information technology was not her area of expertise, she spent a lot of time exploring how to create webpages and handling technical problems. Because of that, she contended that her original plan was held back and she had to cut off several parts because of lack of time and energy. Additionally, with the demand to incorporate the online resource into her materials, Teacher A was afraid that violating copyright would get her into trouble, especially in a contest where award-winning materials would be displayed in public. In this way, although plenty of suitable resource was all over the Internet, due to the copyright problem, she had to search information from government-supported websites and acted prudently by citing the source.

Last but not least, since the materials were made specifically for the contest, meeting the deadline was one of rules she had to follow. A change of her belief was spotted before the deadline. Instead of making her webpage fancy and attractive, Teacher A only sought to finish her work on time. In addition, in order to finish her materials on time, she cut off a few sections such as the introduction of Tomb-sweeping Festival and the use of Camtasia, the software in which she can use to verbalize the procedure of her lesson in a video. Although she contended that adding Camtasia would make her materials clear and vivid, she gave up due to a lack of time. As she said, "Originally the website [webpage] would add on Camtasia, or something fancy, then it turned out to be more descriptive. [I] don't want more fancy tricks because maybe it's a matter of time." (Interview VI, February 10th, 2010). Furthermore, Teacher A cited the information she got on her webpage instead of rephrasing the information in her own words in order to save time.

Community

The community affecting her CALL material design referred to the designers of the past works she referred to, the authors of the online resource she searched on the Internet, the authors of the books she referred to and the teachers in her online computer class, the judges and competitors in the contest she participated in, future teacher recruiters as well as her instructors and classmates from her graduate school.

First, before working on the materials, Teacher A consulted the past awarded works in the same contest. Finding out the lesson plans were designed to match up the resource in *Digital Archives*, Teacher A decided to follow the contest regulation as much as possible to increase the possibility to win. On the other hand, the "unattractive" and "unpractical" traits of the past award-winning works also prompted Teacher A to create something different in her own work. Consequently, the strengths and drawbacks of the awarded works were found to influence the direction of her material. Furthermore, the past works were found to facilitate Teacher A when she ran out of ideas. For example, when she tried to figure out how to connect the idea of "festival" and "joy" with a creative topic, she got the inspiration from the past work entitled 'A Sweet Trip'. As she indicated, "It is about the railway and a sugar factory, and then it is entitled 'A Sweet Trip'. Sweet refers to sugar and journey is associated with railway. I feel that since the designer put efforts on the topic, then I [we] should do the same. Then I [we] figure out [my topic] Happy Chinese Festival." (Interview III, July 30th, 2009). Referring to others' work was a consistent behavior as later Teacher A used other lesson plans online as the reference to work on her own one. As a result, it is concluded that the designers of the past works, whether awarded or not, play an important role in her practice of CALL material design.

Second, Teacher A constantly relied on the Internet to solve problems and find information. As a result, the authors of the online resource she searched on the Internet also played a crucial role during her process of creating materials. The large community established on the

Internet was most helpful and influential to Teacher A in solving either technical problems or enriching her lessons. In the same way, the authors of the books she referred to and the teachers in her online computer class were also facilitative in solving her technical problems.

Third, since she participated in a contest, the judges and competitors in the contest she participated in were also taken into consideration during her process of creating materials. In order to stand out from her competitors and impress the judges, Teacher A attempted to incorporate different ideas and activities in her materials. For example, the reason why she decided to include project-based learning and the use of Camtasia in her lesson was because they were novel ideas unseen in the past lessons and were very likely to make her lessons distinguished in the contest.

Fourth, since the reason for participating in the contest was to win the prize and add value to her resume, she tried her best to produce her best lessons and win the contest as to impress her future recruiters. Therefore, the consideration of her future teacher recruiters was considered to impel her in creating CALL materials in a contest.

Last but not least, since Teacher A studied in graduate school during the time of data collection, her instructors and classmates were also included as part of her community in affecting her practice of material design.

Division of labor

The division of labor referred to the distribution of power relationships with the host institute. Since winning the contest was her goal, Teacher A followed the rules set by the host institute cautiously. In terms of the vague area, she turned to the host institute or a more authoritative source for confirmation. Therefore, it was revealed that in terms of power relationship, as a contestant, she was at a disadvantage. "Walking on the ice" could be used to describe her carefulness. For instance, originally Teacher A intended to use a blog as her webpages since she had no idea how to create webpages out of nothing. Nevertheless, fearing

that she may violate the regulation, she gave up and used FrontPage, the software she was

neither confident in nor familiar with. As she mentioned, "I emailed them (the host institute).

They said blog is fine. But I feel that it's a risk because the contest regulation requires [the

format of] "html". I still use "html" but I have no idea whether it will work or not." (Interview

1, July 10th, 2009). Although the host institute did not disagree with her alternative, she still

followed the written contest regulation and thereby the submission to the power of the host

institute and her inferiority were evident.

Community impacted on Subject

It was found that the community in Teacher A's activity system had an impact on Teacher

A's choice of working alone. As mentioned earlier, Teacher A indicated a strong preference to

work on her own. However, during the long process of material design, such belief has gone

through a change. According to Teacher A, working with no partner sometimes made her feel

frustrated, impotent and lazy, especially when she tried to brainstorm an idea, fix a technical

problem or catch up with her schedule. For example, while she was brainstorming the topic

for her webpage, she changed her thought about working with a partner. As she mentioned, "I

think two persons are better than one…It makes a difference to have someone to discuss with.

He can see what you could not see, and then you can brainstorm together. It is difficult to do

this alone." (Interview III, July 30th, 2009).

How community impacted on Teacher A was consistent even after she finished her material

design. As she recalled from the experience, she contended that it would be better to have a

supportive and encouraging partner since no one could give her a hand when she was

depressed or having low motivation to continue her work.

Rules impacted on agency

It is indicated that Teacher A's belief that learning should be attractive was battered by the

rules in the contest, namely the demand of using resources from the *Digital Archives* website

and heavy workload entailed in the contest. First, although more attractive and suitable

pictures and videos were available all over the Internet, the resource in *Digital Archives*

turned out to be a bore. Against her original belief, she had to obey the regulation and try to

dig something out of the tedious resource. As Teacher A claimed, "If you get something [from

Digital Archives], it's like you have to base on that to design the activity. It's not like you have

the idea first, then you can find all kinds of resource to support [your idea]. It is really a

burden and a bore." (Interview III, July 30th, 2009).

Additionally, the contest requirement of including webpages, lesson plans and worksheets

in the submission somehow overwhelmed Teacher A because of the heavy workload. The

frustration aroused from insufficient technical skills and limitations entailed in the contest

influenced Teacher A's willingness of creating materials. In this case, she claimed that instead

of improving her work for the better, she merely sought to finish the work as soon as possible.

Against her original motive to stand out in the contest and her wish to create attractive

materials, the heavy workload entailed in the contest requirement had an effect on Teacher A's

motive and agency.

How the experience of CALL material design in a contest influenced Teacher A

The experience of participating in the contest influenced the subject, her perceptions toward

CALL as well as her preferred working style, and strengthened her objective of searching for

a better self. First, concerning CALL, different from her original idea that creating webpages

was a waste of time and energy, in the end she realized that by means of webpages, more

teacher users were be able to apply the materials she designed and utilize the information she

collected. As she commented, "It [webpage] can be passed out to more people…I can give

them the link, and then I don't have to print out a lot of things. It's more environmentally

friendly this way. Constructing webpages can help reserve the resource and let it be used by

lots of people. In this way, the use of technology would get its meaning." (Interview VI, February 10th, 2010).　　In addition, since writing lesson plans was seen as a common practice for teacher practitioners, the ability to create webpages was more a great accomplishment for her as a teacher. Third, after participating in the contest, she remained doubted about adopting the resource from *Digital Archives* into her teaching lessons. According to Teacher A, the adoption of such a resource somehow overlooked the meaning of learning. Therefore, she contended that in her future teaching career she would think thoroughly about the meaning and necessity of using CALL. With regard to her preferred working style, she claimed that she would not insist on working alone. Instead, she would find a supportive partner to brainstorm ideas and work out problems together in her future teaching career.

　　Last but not least, participating in a contest and producing her own materials strengthened her outcome of searching for a better self. In addition to prize and adding value to her future recruitment, Teacher A gained a sense of acknowledgment after she realized she walked away with the third prize. As she explained, "Since youth I expected more on myself. I want to be different from others. So sometimes I would participate in some contests to prove that I have the feeling of being alive." (Interview VI, February 10th, 2010). To conclude, since she enjoyed having different experiences, participating in a contest prompted her to find a better self and attain a sense of accomplishment.

Summary

　　The summary presents Teacher A's agency, mediated artifacts, practice of CALL material design, object as well as contextual factors consisting of rules, community, and division of labor existing in her activity system. All the components in Teacher A's activity system are demonstrated in Figure 4.7.

Mediated Artifacts

· The Internet, awarded works, and
Digital Archives

Subject: Teacher A
Agency:

· Teacher A's beliefs

· Experience in material
design
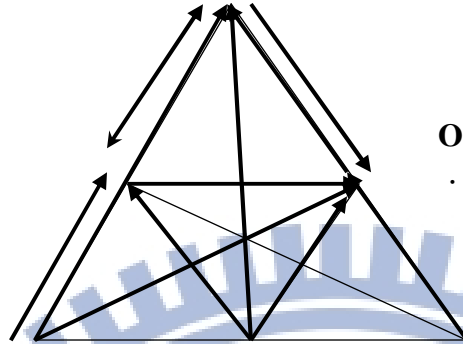
Object

· Win the contest

➲ Outcome

· Find a full-time teaching job

· Seek acknowledgement

Rules

· Contest regulations

· Convention in CALL material

· Deadline of submission

Community

· The designers of the past lessons, authors of
online resource and books

· The teacher in online computer class

· The judges and competitors of the contest

· Future teacher recruiters

· The instructors and classmates from her
graduate school.

Division of Labor

· Inferior to the host institute

Figure 4.7 Teacher A's Activity System

In Teacher A's case, three beliefs were addressed in the study. First, under the belief that

language learning should be attractive, creating vivid and attention-getting materials was a

primary objective for Teacher A. Such belief was reflected by her attempt to use various

stories and activities to draw learners' attention. Second, she believed that language learning

is supposed to be useful and practical. Therefore, she realized such belief by choosing

Chinese festivals as a central theme of her lesson and including the instructions of Movie

Maker to guide students to learn how to create and present their video. Third, she highly

valued the concept that students learn better in student-centered activities. Such a belief was

carried out in her practice by providing students with chances to learn on their own, and

activities to foster student-centeredness.

Due to teacher's beliefs and experience in material design, her agency was shaped,

guiding her in achieving her goal of winning the contest (object) and eventually helping her to

find a full-time teaching job and gain acknowledgement (outcome). Regarding the influence of her mediated artifacts, a few interactive relations were explored in Teacher A's activity system. The mediated artifacts served as tools for Teacher A (subject) to accomplish her practice of material design. In this case, Teacher A reported to heavily rely on her tools—the Internet and past awarded works to collect information and decide the direction of her practice. In addition, her object of winning the contest was also influential to her use of *Digital Archives* as her mediated artifacts. As a consequence, her practice was reflected by the mediated artifacts for lots of online resource and information from the *Digital Archives* website were presented in Teacher A's practice of material design.

In terms of the contextual factors affecting her beliefs and practice, several interactive relations were found to exist in Teacher A's activity system. First, the rules play a crucial role in affecting Teacher A's agency, object and mediated artifacts. For one, the contest regulation of utilizing resource from a particular source conflicted Teacher A's belief that language learning should be attractive. Restricted by the rules, Teacher A compromised and merely sought to get her work accomplished. For another, the rules existing in the contest regulation determined the use of mediated artifacts as the demand of creating webpage urged Teacher A to utilize the Internet, online computer class and *Digital Archives* as to complete her practice.

Second, the community cast an impact on agency, object and mediated artifacts. Constantly referring to others' work was a consistent behavior for Teacher A so that her belief that learning should contain attractions and practice were reflected by the communities established by designers of the award-winning works. Additionally, the community without a partner was influential to her object of winning the contest as she merely sought to complete her work in the end. Lastly, the community led to the frequent use of mediated artifacts since working with no partner left Teacher A no choice so that she had to turn to her tools for help.

Third, the division of labor was concluded to influence Teacher A's practice and object. Since she constantly feared to violate the regulations, she compromised and modified her

practice to fit in the standard established by the host institute. Such a compromise had a

positive impact to her object of winning the contest.

Case II: Teacher B

With the aim of adding value to her resume on future teacher recruitment, Teacher B participated in Contest Two wishing to win the contest. As a teacher intern at the time of data collection, Teacher B worked with her classmate from graduate school to share the responsibility and brainstorm ideas together. With regard to the contest regulations, Contest Two demanded elements of audio, pictures, videos, animation, and text to be integrated into the materials. Figure 4.8 demonstrates the official website of Contest Two.

Figure 4.8 Screenshot from the official website of Contest Two

Teacher's belief of Teacher B in general, the description of her CALL materials and the components affecting her CALL material design and beliefs are illustrated in the following sections.

Teacher B's Beliefs in General

Belief 1: Language teaching should include the teaching of culture and historical background of the target language

Believing that learning a language should involve the learning of culture and historical background, Teacher B tended to introduce historical events in her previous part-time teaching experience. Since Teacher B targeted senior high school students as her potential learners, she supposed they should be able to probe into more in-dept subjects from the

aspects of culture and history. As Teacher B suggested, "I think [teaching] is beyond

textbooks, and not limited to textbooks." (Interview I, July 28th, 2009).

Her belief about involving the teaching of culture and historical background in language

teaching could have resulted from her former training and prior teaching experience. From her

training in secondary education program and part-time experience in vocational high school,

she realized that in addition to imparting fragmented knowledge, it was important to present

content-based topics through the use of English. To sum up, her belief was shaped by the

training she had received as well as her prior teaching experience.

Belief 2: Language teaching should include guiding students to think critically

Base on her belief in the need to guide students to think critically, Teacher B loved to bring

out thought-provoking topics and current events for students to develop their critical thinking

skills and the ability to reflect on themselves. For instance, Dr. Martin Luther King's speech

and Michael Jackson's sudden death would be appropriate topics. As Teacher B explained,

"For high school students, I think [I] can include something reflective since high school

textbooks are more diverse [in their topics]." (Interview I, July 28th, 2009). Additionally, when

talking about her previous lesson on American Indians, Teacher B said, "I'll offer different

perspectives. For example, I would ask students to think 'if you were an American Indian at

the time, what would you want to express to your people?'" (Interview I, July 28th, 2009).

According to Teacher B, by raising thoughtful questions, more student-teacher interaction

could be triggered at the same time. As she suggested, "If teaching is limited to the

introduction of knowledge with little interaction, there is no need for teachers [to be in the

classroom]." (Interview I, July 28th, 2009).

It should be noted that her emphasis of critical thinking in this instance was because such

training was rare in her previous learning experience. Recalling from her past learning

experience, Teacher B perceived it to be a pity that her high school teacher merely passed on

knowledge without specifying her objective and guiding students to do extensive thinking. In brief, her belief about training students to think critically was shaped by her previous learning experience and this belief could determine the direction of her practice of material design.

Belief 3: Language teaching should be interesting, attention-getting and close to students' everyday life

Due to her belief that language teaching should be interesting, attention-getting and close to students' everyday life, in her prior teaching experience, Teacher B frequently utilized YouTube videos as a warm-up activity to get students' attention. For instance, when discussing the history of the US Civil War, she once used the trailer of the movie *Gone with the Wind* to facilitate her teaching. According to Teacher B, teaching without videos seemed to be, in the vernacular, "lame". In addition to YouTube videos, in her past teaching experience, instead of merely listing key words on PowerPoint slides, Teacher B enjoyed adding on animations, hyperlinks to other pages, pictures and songs to make her slides look attractive and vivid. Lastly, she believed that if language teaching was close to students' everyday life, students would have higher motivation to learn. For example, she would give examples by referring to students' favorite idols and interests. As Teacher B claimed, "I would add some videos and something close to [students'] everyday life, just wanting to make more connections [to students' experience]." (Interview I, July 28th, 2009).

Teacher B's Original Plan in CALL Material Design

According to the first interview, with the attempt to adopt culture as a central theme in her materials, Teacher B would like to use relevant videos to stir up student discussions. As the worksheet in the past awarded materials was considered merely a combination of pictures and reproduced texts, she intended to create lesson plans and worksheets that were creative, attractive and in line with her teaching purpose. Additionally, she would like to design

activities that promoted student-teacher interactions and student discussion. In this regard, it would be more meaningful if students were able to think and relate themselves to the topic discussed. With reference to technology integration, Teacher B planned to incorporate YouTube videos to facilitate teaching and use eye-catching pictures and animations in creating her PowerPoint slides. After Teacher B's original plan was addressed, her real practice in CALL material design is illustrated as followed.

Teacher B's Practice in CALL Material Design

Although Teacher B worked with a partner in the contest, they were in charge of different works individually and turned to each other when there was a need for discussion. Consequently, the materials her partner designed such as the PowerPoint slides and worksheets on the movie *Just My Luck* and the fifth period on the lesson plans were excluded from Teacher B's practice of material design.

CALL Materials—PowerPoint slides, lesson plans and worksheets

According to the contest regulations, the materials were required to include at least lesson plans and technology-integrated elements. Therefore, the materials Teacher B designed contained PowerPoint slides, lesson plans and worksheets.

PowerPoint slides

The PowerPoint slides were viewed as a major aspect of her materials with three features illustrated as follows. First, in agreement with her belief, Teacher B used vivid pictures and made the presentation of her slides clear and attention-getting. At least one related picture would be placed beside each subject, thus helping students to grasp the concept easily. Furthermore, instead of writing complete sentences, she used key words to demonstrate the concept in a concise way. Two example slides are presented in Figure 4.9. Second, the

PowerPoint slides served as the skeleton of the class and a major facilitator in teaching. Since the major teaching procedure including activities, key points and questions were clearly demonstrated on the slides, the teacher user would find this reference handy when teaching. Third, corresponding to her belief, Teacher B utilized icons and pictures that relate to students' everyday life. For example, in referring to the experience of being rejected, she used the picture where "nice guy card" was played as shown in Figure 4.10.

Figure 4.9 Two example PowerPoint slides

"You are a nice guy"
Note: The "nice guy card" is usually played when a girl tries to reject a guy who is nice and helpful in things such as fixing computer and running errands.

Figure 4.10 An example PowerPoint slide
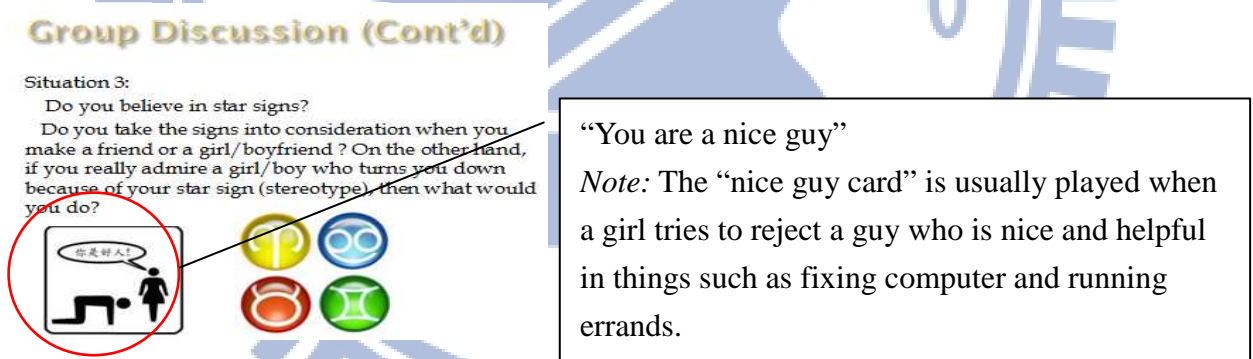
Lesson plans

The lesson plans were inclusive of the teaching instruction for five periods of class, four of which were designed by Teacher B. Since the contest regulation did not restrict the use of language, she used English throughout the lesson plans. For any particular terminology and reference, she would specify Chinese inside the brackets. For each class, the lesson plans

contained a warm-up activity, teaching procedure and wrap-up with three features presented as follows.

First, the lesson plans were designed based on *A rabbit's foot and a piece of wood* , a lesson from Samming high school textbook. Consequently, the lessons could function as complementary and extensive materials for high school teachers to incorporate into their class. Second, the lessons were intimately related to one another. The witchcraft performed in the Disney animation *Pocahontas* and the horoscope were all centered on the theme of superstition. Corresponding to Teacher B's belief, such a theme was close to students' everyday life. Third, in triggering students to think critically, the lessons involved the discussion of cultural difference between the East and the West and explained the rationale of some superstitions such as "Never walk under a ladder" as presented in Figure 4.11.

Figure 4.11 Examples of the lesson plans

Activities

Two major types of activities were included in the materials. First, in accord with Teacher B's belief in training students to think critically, Teacher B designed discussion activities that guided students to make comparisons between cultural differences and think about their own cultural customs when given information about superstitions in the West. For example, on referring to the symbols that represented good luck in the West, she asked students to reflect on customs in Taiwan such as purchasing the lottery tickets in red underwear as demonstrated

in Figure 4.12.

Figure 4.12 Discussion activities in Teacher B's lessons

Second, conforming to her belief, the scenarios Teacher B designed for students to figure out their response were close to students' everyday life. For instance, centered on the theme of superstition, one scenario was regarding having a beloved boyfriend while your superstitious mom took the suggestion from a fortune teller about your unmatchable horoscope. Since the scenarios were dilemmas happening in real life, students were able to relate to those scenarios. Figure 4.13 presents one of the scenarios.

Figure 4.13 The scenario in Teacher B's lessons

Worksheets

Two worksheets in Teacher B's materials served as either supplementary materials for PowerPoint slides or homework assignments as illustrated in Figure 4.14. The worksheets were used to guide students to prepare for their class discussion and offer a hard-copy version

of the material at hand in which they could take notes and write down their response. The content and purpose for the worksheets Teacher B designed are demonstrated in Table 4.2.

Worksheet for class

◎ Let's think together!
1. People from what country do you think is the most superstitious?
_____
2. Based on your opinion, in what ways do Taiwanese people behave superstitiously?
_____

◎ Group discussion & Information exchange!
Here are 3 stories, and pretend you are in the situation, what would you do?
1.

Situation 1:
If you have a very close boy/girlfriend, and you plan to get married with him/her. Your mom, who is deeply believe in fortune-telling, stop your marriage because your horoscopes are unmatchable (八字不合). What will you do?

Write down your solutions:
_____

Lyrics of "Superstition" –Raven-Symone

Very supersticous, Writings on the wall,

Very supersticous, Ladders 'bout to fall

Thirteen month old baby, Broke the looking glass,

Seven years of bad luck, Good things in your past.

When you believe in things,That you don't understand,

When you suffer,

Supersticion ain't the way.

Very supersticious, Wash your face and hands,

Rid me of the problem, Do all that you can.

Keep me in a daydream, Keep me going strong,

Figure 4.14 The worksheets in Teacher B's lessons

Table 4.2

Detailed description of the worksheets

Worksheet	Content	Purpose
1. Worksheet 1	Ask students to take notes from PowerPoint slides and write down their answers in discussion activities	Help students to follow the procedure of the class and organize their answer before discussion
2. Worksheet 2	Provide students with the lyrics of the song *Superstitions*	Help students to have a hard-copy version of the lyrics

The Gap between Teacher B's Beliefs and Practices

Although Teacher B believed that learning should be interesting and attention-getting, she abandoned the use of some interesting videos because they were either too challenging or without subtitles. With the consideration of learners' language proficiency, videos from *Discovery Channel* and *CNN News* were dropped because of their complicated quality.

Similarly, some entertaining overseas YouTube videos without subtitles were also abandoned.
As Teacher B claimed, "Sometimes I have to give up the resource with better quality just to
match students' proficiency level. Because if you give them something too difficult, it is
useless if [students] do not understand." (Interview III, September 5th, 2009). Because of that,
a gap between her belief and practice was formed due to her consideration of learners'
proficiency ability.

Components interplaying within Teacher B's Activity System

Agency, mediated artifacts, objects and outcome

By means of winning the contest (object), Teacher B wished to attain her goal of finding a
full-time teaching job and keeping improving herself (outcome). As she later explained,
"Participating in a contest was pretty interesting…I think I can learn something. In fact, when
you [I] force yourself to do it, you would face some problems and you learn how to fix it."
(Interview III, September 5th, 2009).

With reference to her agency, in addition to her beliefs, it was found that her agency was
also formed by her part-time teaching experience, positive experience in contest participation
and learning experience in graduate school. First, her experience in teaching learners with
different language proficiency levels and participating in numerous types of contests brought
a positive impact to her relatively high confidence in material design as well as contest
participation. Second, Teacher B maintained that her learning experience in graduate school
played an influential role in her use of YouTube videos. According to Teacher B, her
classmates were fond of utilizing YouTube videos as a way to begin their in-class presentation,
making the class atmosphere relaxing and full of laughter. As she further explained, "At the
time our classmates would figure out every means to do our presentation. It was vivid and
they used lots of videos. So now we [I] would use videos in teaching and use videos as a way
to stimulate students' motivation." (Interview I, July 28th, 2009). In brief, her use of videos

and movies as facilitators in her lessons was shaped by her classmates in graduate school.

Regarding the use of mediated artifacts, in realizing Teacher B's practice, they consisted of the use of pictures, videos and the instruction of poem, songs and culture. Several interactive relations were discovered. First, Teacher B's agency was found to determine her use of mediated artifacts (pictures and YouTube videos). Believing that language learning should be attention-getting and close to students' lives, Teacher B used vivid pictures on her PowerPoint slides and worksheets to make her presentation conform to her belief. In addition, she was exclusively fond of using YouTube videos as a way to motivate students and capture students' attention. Therefore, her mediated artifacts (YouTube videos) made her practice (material design) full of the use of videos. Seeing YouTube as a resourceful website where all kinds of videos were available, Teacher B downloaded the song entitled *Superstition*, a commercial, and even a Taiwanese variety show as facilitators in her material design. As Teacher B suggested, "We are so used to using YouTube videos and they are way too powerful. Because there is animation [video] on YouTube, I think this would be interesting, and it's overseas stuff [authentic]." (Interview II, August 27th, 2009).

However, it should be noted that after the contest came to an end, the mediated artifacts caused confusion to her subject when Teacher B found out the use of YouTube videos was too prevalent in her materials. Although the videos may achieve the effects of drawing students' attention and facilitating her teaching, the over reliance on videos somehow limited the scope and diversity of her use of technology. As a consequence, Teacher B changed her concept about using videos and resolved to seek new ways of utilizing her software and other resources at hand.

Contextual components affecting Teacher B's CALL material design
Rules

In Teacher B's activity system, the rules included the contest regulations and the deadline

for submitting the work. First, the contest regulations only specified the requirement that audios, pictures, videos, animations, and texts be integrated into the materials. As for the format of the lesson plans and technology integration, specific guidelines and grading criterion were not offered to the contestants. As she claimed, "There was no clear guidance. When working on the lesson plans, there was no clear format…Then I followed my own way but in fact I had no idea it was right or not." (Interview V, March 14th, 2009). Being unsure about the direction and types of material preferred by the host institute, Teacher B had no choice but to design materials based on her own concept of what was viable. The confusion and uncertainty might lead to a gap between her materials and the materials favored by judges of the host institute. Consequently, after the result of the contest was released, Teacher B considered it a pity for not realizing what types of material the host institute desired. As she explained, "If it [the host institute] suggested that we had to design webpages, then maybe I would know what to do…Then isn't it a waste of time? It [the host institute] did not say so in the beginning. It [the host institute] only said it[the material] had to be associated with technology." (Interview V, March 14th, 2009).

Second, meeting the deadline was another rule she needed to follow when participating in this contest. Being pressed for time, in the end, instead of creating webpages, multimedia or animation, she used PowerPoint and YouTube videos, the types of technology she was most familiar with, as ways to incorporate technology into her lessons. In brief, the rules involving the ambiguous contest regulation and the pressure of meeting the deadline were found to have added uncertainty and restrictions to Teacher B's material design.

Community

The community affecting Teacher B's CALL material design consisted of the partner she worked with and the person she asked for help in creating the materials, the judges and competitors in the contest she participated in, her future teacher recruiters, as well as her

instructor and students from the school she served her internship.

First, working with a partner was beneficial to Teacher B in clarifying confusion, seeking solutions and brainstorming ideas. Since her partner shared part of the responsibilities with Teacher B, her workload was lightened and she could turn to her partner for advice whenever there was a bottleneck. As Teacher B suggested, "That's the benefit of working with someone. [We] can come up with some other ideas. Or if I have no idea what to do with this part, I can ask." (Interview II, August 27th, 2009). On top of that, other people Teacher B asked for help from was also part of the community in helping her collect information. For instance, in inquiring about the wedding customs, Teacher B turned to her mother for further details because of her rich experiences in participating in weddings.

Second, since her material design was situated in the context of a contest, the judges and competitors in the contest she participated in were taken into consideration. As Teacher B believed that achieving diversity and completeness in the lessons would increase her chance to win the contest, diverse elements of movie, animation and horoscope were combined in the lessons as a result. Additionally, in order to impress the judges, she had to work on lots of details in making her materials flawless. As Teacher B claimed, "There are lots of details I would not have fixed in the past, even though I noticed their existence. But that's not the case now. Since this is a contest, some details have to be handled." (Interview III, September 5th, 2009).

Third, as winning the award was viewed as an impressive achievement on her resume, Teacher B was motivated to do her utmost to impress her future teacher recruiters. Consequently, the consideration of her future teacher recruiters was seen as a positive reinforcement for her in completing CALL materials in a contest.

Finally, since she worked as an intern at the time of data collection, her instructor and students from the school she served her internship were also part of the community affecting her material design.

Division of labor

Among the contextual factors, the division of labor referred to the distribution of power relationships with her partner. During the process of material design, Teacher B and her partner were in charge of different parts and thus shared equal power in the materials they designed individually. As she recalled, "We searched information on superstitions individually and then we figured out ways to put them together…Then we came to an agreement on how to take in charge of different worksheets."(Interview VI, July 27th, 2013). Although Teacher B turned to her partner for help when there was a bottleneck, she was still the designer who had full power in deciding what should be included into the materials she was in charge of. Consequently, such division of labor empowered her in deciding her practice of material design with supports from the collaboration.

How the experience of CALL material design in a contest influenced Teacher B

As the awarding list of the contest was released, Teacher B felt agitated toward the ambiguous contest regulation and doubtful of the grading policy after realizing that her materials did not win any awards in the contest. First, as the contest regulation was ambiguous in guidance and lacking a uniform format, there was a mismatch between the materials Teacher B designed and the materials that won the awards. In addition, without listing any comments for evaluation policy and room for improvement, the contest turned out to be a disappointment. Because of that, Teacher B determined to be more prudent before participating in any contests in the future. Furthermore, seeing the award-winning materials were mainly creations of webpages, Teacher B remained doubtful of such grading criterion, which made her wonder about the significance of such efforts. As she justified her viewpoint,

You create a website [webpages], and there is so much for you to teach, but what can the students learn? For your [webpages], you ask your students to go home and have a look.

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Then that information is exactly what they can see and get from *Google* or textbooks.

What is the point of that? (Interview V, March 14th, 2010).

In addition to doubting the significance of creating webpages, Teacher B also questioned what abilities teachers were expected to possess in technology integration and their roles in the classroom. As she claimed, "If the teacher has to spend so much time designing that [webpages], then she does not have to teach the class. If students can use that [webpages], what do we need a teacher? " (Interview V, March 14th, 2010). Consequently, it should be noted that the result of the contest had strengthened Teacher B's viewpoint toward the meaning of CALL materials and the role that teachers will play in her future career.

Additionally, according to Teacher B, the experience of participating in the contest boosted her confidence and ability in collecting resources and understanding the must-haves in designing materials. Although she might act more prudently toward the contest regulation, she claimed not to be fearful in participating in similar contests in the future. Furthermore, her concept about utilizing video into teaching has been reshaped as she realized the videos would be facilitative only when the teacher offered specific guidance. As she further claimed, "As a teacher, the best thing about you is not just to present things [videos] and kill time. The point is what extensive activities you would do…But a lot of teachers just play the video and ask you [students] to write a report without saying anything or giving any guidance." (Interview V, March 14th, 2010). In brief, the experience of designing materials in the contest has strengthened her concept toward technology integration, boosted her confidence and reshaped her idea about using videos in her future teaching career.

Summary

The summary demonstrates Teacher B's beliefs, mediated artifacts, CALL material design as well as contextual factors consisting of rules, community, and division of labor existing in

her activity system. Figure 4.15 illustrates the components in Teacher B's activity system.

Meditated Artifacts
‧ YouTube videos, pictures
‧ The instruction of culture

Subject: Teacher B
Agency:
‧ Teacher B's beliefs
‧ Part-time teaching experience
‧ Experience in contest participation
‧ Experience in graduate school

Object
‧ Win the contest

➲ Outcome
‧ Find a full-time teaching job
‧ Keep improving herself

Rules
‧ Ambiguous Contest
   regulation
‧ Deadline of submission

Community
‧ The person she asked for help
‧ Her partner
‧ The judges and competitors in the
   contest she participated in
‧ Future teacher recruiters
‧ The instructor and students from
   the school she served her internship

Division of Labor
‧ Share equal power with her
   partner

Figure 4.15 Teacher B's Activity System

In Teacher B's case, three beliefs emerged from the study. First, she believed that language teaching should include the teaching of culture and historical background of the target language. Therefore, such belief was reflected by her introduction of superstitions and emphasis on cultural awareness in her material design. Second, under the belief that language teaching should include the training of critical thinking, she designed thought-provoking activities and scenarios in guiding students to think and respond. Third, due to her belief that language teaching should be attractive and close to students' everyday life, she used vivid pictures and YouTube videos to practice what she believed.

Several interactive relations were discovered in terms of the impact of her mediated artifacts. The mediated artifacts served as tools for Teacher B (subject) to win the contest

(object). Reflecting her belief about language teaching, she utilized YouTube videos in making her materials attractive. Also, this mediated artifact made her practice (material design) abundant in the use of videos. In the end, the over use of her mediated artifacts caused an impact to her subject, making her rethink the meaning and function of using videos as facilitators.

With reference to the contextual factors affecting her beliefs and practice, a few interactive relations were revealed in Teacher B's activity system.   First, the rules caused an impact to Teacher B's subject, object and mediated artifacts. The ambiguous contest regulation caused confusion and uncertainty to the subject and contributed to a gap between her object of material design and the award-winning materials. Additionally, the pressure of meeting the deadline prompted her in deciding on the use of PowerPoint and videos as her mediated artifacts and way of technology incorporation due to the convenience and familiarity.

Second, the communities play a significant role in affecting Teacher B's object and mediated artifacts. Working with a partner and having someone to ask for help were influential in solving problems and completing her material design. Moreover, the consideration of the judges and competitors in the contest, as well as future teacher recruiters prompted her to do her best in achieving her object.

Third, the division of labor was found to influence Teacher B's mediated artifacts. As Teacher B and her partner were in charge of different duties, they turned to each other for help when there was a bottleneck. Therefore, Teacher B had the full power in deciding her use of mediated artifacts and her share of material design.

Case III: Teacher C

Aiming to win the contest and add credits to her resume for her future recruitment, Teacher C participated in Contest Two individually when she was an intern. Teacher C's beliefs in general, her CALL materials and the components affecting her CALL material design are illustrated in the following section.

Teacher C's Beliefs in General

Belief 1: Language teaching should contain a clear objective

Due to her belief that there should be a clear objective in language teaching, Teacher C contended that it was teachers' duty to ensure every teaching procedure and activity contains a clear teaching purpose. As she maintained, "Rather than play flashy tricks, eventually you have to have a clear focus in doing the activity and then the students could learn. I think teachers should have a clear focus in mind."(Interview V, July 13th, 2013). Her belief was formed because of her instructor in secondary education program. In that course, to carry out the task assigned by the instructor, the class was required to create a video by acting out the teaching methods in the textbooks. Since it took plenty of time and effort to accomplish, the purpose of the task remained questionable and prompted Teacher C to ponder the meaning behind such teaching activity. As she further explained,

> We begin to wonder why we have to create the video. A lot of us are complaining and it
> is in fact meaningless. First, it is time-wasting and effort-taking. Second, those teaching
> methods were not applicable in today's [teaching environment]. It's like we have to take
> the novel *Dreams in the Red Building* (紅樓夢) from the shelf and act out the plot. It
> seems to be impractical and nonsense (Interview I, July 28th, 2009).

Such ambiguous and confusing task given by her instructor shaped her belief about having

a clear objective. Additionally, she became more agitated when the instructor asked the class to hand in those videos. As she emphasized, "It's clear that the videos are made for her own sake. She can play those videos in the class without teaching those methods. Then, she can have an easy job, and I really do not appreciate that." (Interview I, July 28th, 2009). Consequently, after this unpleasant experience, whenever Teacher C designed a teaching assignment or task, she contended to ensure whether it contained a clear objective or not.

Belief 2: Language teaching should include the teaching of the four language skills

Under the belief that language teaching should include the teaching of the four language skills, Teacher C intended to design lessons involving all language skills. Such belief was shaped due to her perception that the education in Taiwan was restricted to test-taking and over-emphasis on reading and vocabulary memorization. Therefore, since each skill entailed its own significance, she maintained that the balance of four skills would be most beneficial to learners. As she emphasized, "From the training received in my institute, I know that if you want students to have output, you need to give them input beforehand…For example, before asking students to write, we should give them some reading on great example articles." (Interview V, July 13th, 2013). Therefore, she contended that it would be a pity to merely focus on reading and writing without incorporation of speaking and listening skills. According to an example in Teacher C's previous part-time teaching job, before proceeding with the reading of Jason Wu, she found one of her students mistakenly related the name to the Taiwanese chef Wu Bao-chun (吳寶春). As she recalled, "In that case, if you proceed to teach reading without giving them [students] some warm-ups to help them to get involved, that would be a shame."(Interview V, July 13th, 2013). It was suggested that when students had little common knowledge of such person, the teaching of reading and grammar analysis would not be effective if input such as relevant video or discussion was not implemented beforehand. Consequently, with the benefits of integrated four language skills were addressed, Teacher C

was determined to put her belief into practice.

Her belief about integrated four language skills was influenced by her previous learning experience in language learning and training in secondary teacher education program. First, in her previous learning experience, the language skills were all taught in isolation. As she recalled, "They [The lessons] were all monotonous. When taking a conversation class, he [the teacher] would give you a dialogue and ask you to practice in pairs. It was very traditional." (Interview V, July 13th, 2013). In this regard, Teacher C would like to adopt a different approach by integrating the four skills.

Additionally, her training in a course in secondary education program was also found to be decisive in shaping her belief. As her instructor asked the class to carry out teaching demonstrations in groups, each group had to design materials based on the assigned language skill. Since she was impressed by the teaching demonstrations and the materials designed on different language skills, she realized that the integration of four language skills could be an interesting attempt. As a consequence, due to this positive designing experience, her belief was formed accordingly.

Teacher C's Original Plan in CALL Material Design

First, with reference to the overall design, drawing on the first interview, it could be revealed that Teacher C intended to design materials based on one lesson from a high school textbook. In this regard, it was worthwhile to invest the time and efforts since the materials could be further utilized in her future use. In addition, to practice what she believed, she attempted to incorporate four language skills in her lesson plans with a central theme on travelling. According to Teacher C, her choice of travelling was because it was not only appropriate in relating to students' everyday life, but also be convenient for her to search relevant pictures and videos to facilitate her materials. Second, regarding technology integration, she planned to include PowerPoint slides, relevant videos, audio files and the use

of blog for her WebQuest activity as well as Moviemaker. Finally, as for the teaching materials, as the contest only specified a must to include lesson plans in addition to technology-integrated elements, she planned to contain lesson plans, worksheets and student projects in her materials.

Teacher C's Practice in CALL Material Design

CALL Materials—PowerPoint slides, lesson plans, activities and worksheets

According to the contest regulation, the materials had to include at least lesson plans and technology-integrated elements. Therefore, the materials Teacher C designed contained PowerPoint slides, lesson plans, activities and worksheets.

PowerPoint slides

As the central theme was Chiufen, an old city in New Taipei City, the PowerPoint slides were used to facilitate the warm-up activity in which photos of Chiufen were used to motivate students and help them relate their travelling experience as presented in Figure 4.16. In addition, they could help teacher users to proceed to the listening practice and the upcoming WebQuest activities.

Figure 4.16 The example PowerPoint Slides in Teacher C's materials

Lesson plans

The lesson plans included the teaching instruction for three class periods. Without any limitation on the language used in the contest, Teacher C used Mandarin instead of English in her lesson plans. The lesson plans contained a warm-up activity, teaching procedure and wrap-up with four characteristics introduced in the following sections.

First, in line with her belief about having a clear objective, Teacher C specified the teaching purpose along with every teaching procedure and activity on the lesson plans as shown in Figure 4.17. According to Teacher C, although in the beginning of her design process, she attempted to cover everything and make her lesson full of diversity, she later realized that there should be a clear focus in her materials. Her belief was strengthened for her tendency to constantly examine her materials.

II. Lead in
1. The teacher shows the pictures of *Chiufen* for students to appreciate. The purpose of the activity is to trigger students' interest toward *Chiufen* and relate to their own travelling experience.
2. The teacher asks three questions and let students proceed in group discussion. This is to train students' ability in thinking and expressing themselves in English.
III. WebQuest learning activity: exploring the webpage www.wretch.cc/blog/eason5455 , explain the tasks

Figure 4.17 The sample of the lesson plans

Second, the lesson plans were designed based on *Through the ages: The legend of Chiufen,* a lesson from a *Long-Teng,* a publisher for high school textbooks. In addition to the shared topic of *Chiufen*, the reading of the lesson was also adopted into the listening practice in her materials. As a result, the lessons could serve as complementary materials for high

school teachers to follow in their teaching practice.

Third, in line with her belief about the need to integrate four language skills, the lessons involved listening practice in filling in the missing blanks, speaking activity in discussing their travelling experience, reading in comprehending the texts of *Chiufen*, and writing exercise in working out the itinerary of *Chiufen.*

Fourth, throughout the lesson plans, for any reference to PowerPoint slides or webpage from the WebQuest activity, screenshots were demonstrated along with the descriptions as presented in Figure 4.18.
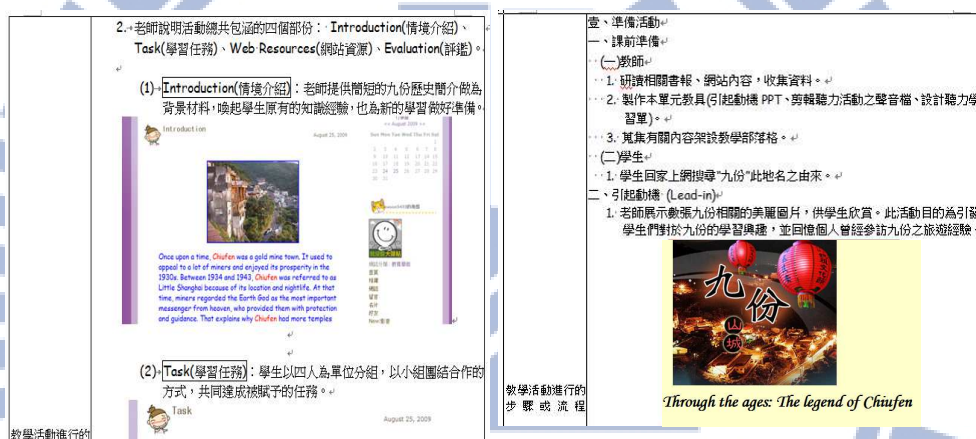
Figure 4.18 Example lesson plans of Teacher C's materials

Finally, since the tasks centered upon WebQuest formed the major skeleton of the lessons, the lesson plans served as step-by-step illustrations for teacher users to make use of WebQuest activity to assign students to carry out the tasks.

Activities: Listening practice and WebQuest

Two types of activities were encompassed in the materials. In addition to the listening practice designed based on the lesson from the textbook, WebQuest, a type of inquiry-based learning, was designed to encourage students to seek answers and perform tasks by exploring the webpages. Constructing her webpage based on *Wretch* (無名小站), one of the major

blogging system in Taiwan, Teacher C used WebQuest as a platform to offer specific guidance

and information for students to carry out tasks such as writing an itinerary and making a

leaflet in presenting the scenery and features of *Chiufen*, as demonstrated in Figure 4.19.
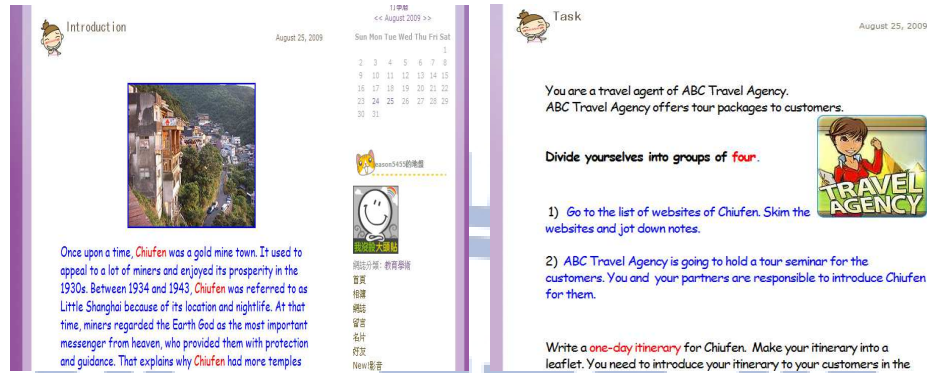
Figure 4.19 WebQuest activity in Teacher C's materials

As one of the rationales in WebQuest was to offer a clear source of information for

students to explore and save time on wandering on the Internet, cyber links of the associated

information were listed for students to click in and tap into the resource. Corresponding to her

belief about having a clear objective behind every teaching procedure, every activity in

WebQuest was designed with a clear goal listed alongside. Additionally, to make the

WebQuest activity more meaningful and reflective, Teacher C even provided evaluation

criterion for students to evaluate their peers' works. Figure 4.20 demonstrates her web pages'

discussion of web resources and evaluation.
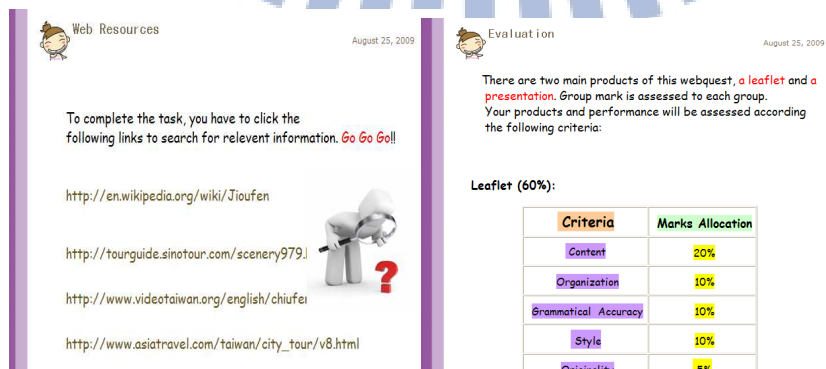
Figure 4.20 WebQuest activities in Teacher C's materials

Worksheets

According to the past awarded materials Teacher C referred to, it seemed that the materials had to contain worksheets. Therefore, Teacher C designed one worksheet for learners to fill in the blanks in the listening practice. The listening passage was adopted from the lesson *Through the ages: The legend of Chiufen* in *Long-Teng* high school textbook. Figure 4.21 presents the worksheet that Teacher C designed.
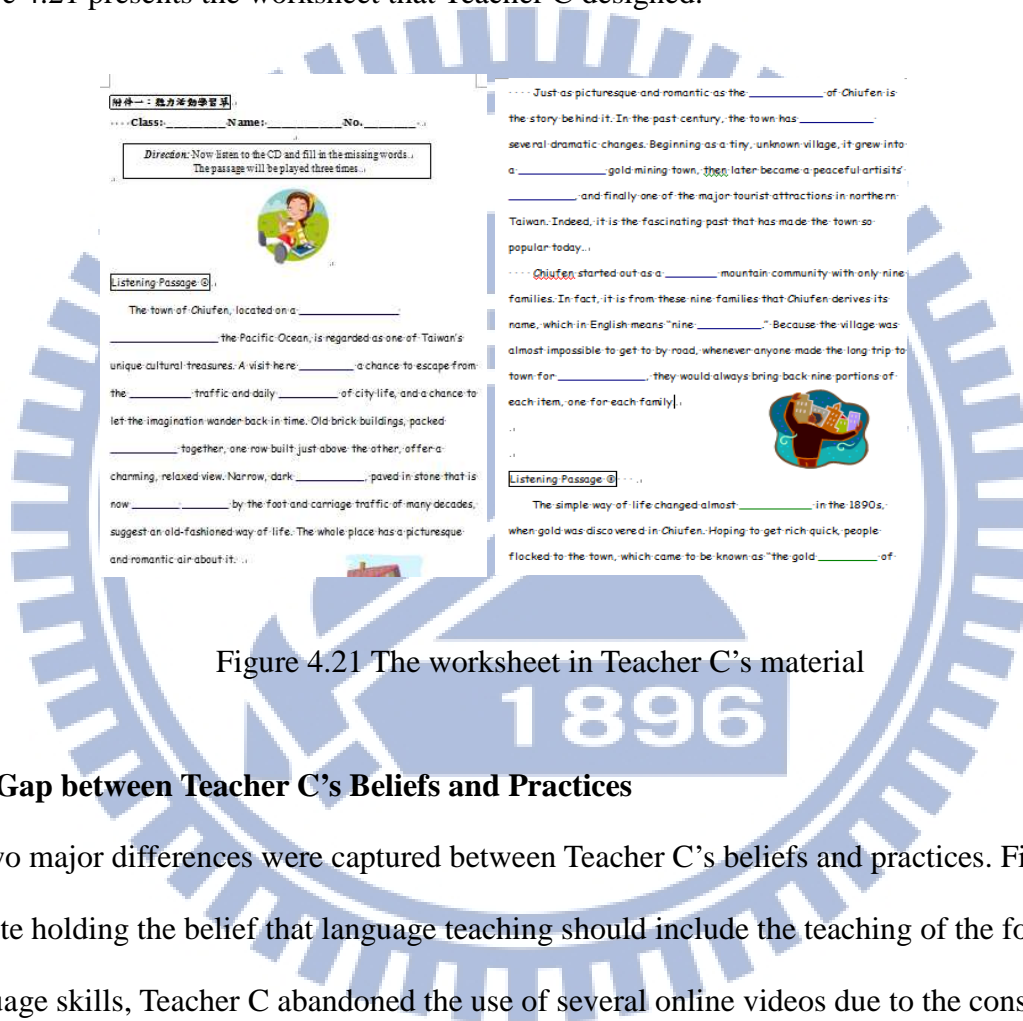
Figure 4.21 The worksheet in Teacher C's material

The Gap between Teacher C's Beliefs and Practices

Two major differences were captured between Teacher C's beliefs and practices. First, despite holding the belief that language teaching should include the teaching of the four language skills, Teacher C abandoned the use of several online videos due to the consideration of copyright. In order to act prudently, she adopted only one listening practice adapted from a textbook, making her materials lack of training in listening skill. Second, compared with her original plan, her materials were more simplified due to a lack of time. As she contended, "If there were more time, I could have put more pictures and made it[the material] cuter." (Interview V, July 13th, 2013).

Components Interplaying within Teacher C's Activity System

Agency, meditated artifacts, objects and outcome

In Teacher C's activity system, her attempt to achieve the practice and win the contest (object) was to attain a full-time teaching job (outcome). As she recalled, "At that stage, I did not think much. I was confused about my future. My goal was to add values to my future teacher recruitment. It was as simple as that."(Interview V, July 13th, 2013).

Her agency not only included her beliefs but also her learning experience in graduate school, her technical knowledge in technology integration, and her experience in CALL material design. First, her training and learning experience in graduate school played a crucial role in developing her skills and knowledge in technology integration. According to Teacher C, her training in graduate school enabled her to create PowerPoint and operate software such as Moviemaker. Furthermore, her belief about having a clear objective was influenced by the philosophy of her instructor that teachers should use technology only when it irreplaceable by human efforts. According to Teacher C, her instructors' beliefs in CALL had transformed into her own beliefs that she wished to practice in her material design. As she explained, "For example, videos are something human efforts could not achieve. Then it's the same as pictures. Besides, the questions for class discussions could be listed on [PowerPoint] to save time for writing on the blackboard." (Interview III, August 25th, 2009). Additionally, she even reviewed the handouts distributed by the instructor in the CALL-related course taken in graduate school and gained the inspiration of using WebQuest from the handouts.

Second, her technical knowledge and experience in CALL material design were also found to form her agency. In addition to knowing how to operate Moviemaker and create PowerPoint slides, she also had the experience of participating in a CALL material design contest. In a course she took in secondary teacher education, she created materials incorporated with videos, self-made audio files and the software Winoke. After submitting her materials in a campus-wide contest, she was surprised to know she won the prize. As a

consequence, such positive experience helped motivate her in further attempt in CALL

material design and participation of contest.

Concerning the mediated artifacts, they were adopted as tools for Teacher C (subject) to

achieve her practice (object) and carry out her beliefs (agency). To accomplish her material

design, Teacher C utilized various tools such as PowerPoint Slides, and most importantly, the

WebQuest activity.

Due to her reluctance to learn new technology, instead of referring to books and exploring

other options, Teacher C merely intended to utilize the available resources and technical skills

at hand. Therefore, a blog was used out of convenience as her major meditated artifacts for

the WebQuest activity. In addition, in accord with her belief that teaching should contain a

clear teaching purpose, instead of creating fancy PowerPoint slides and complicated

animation, Teacher C created slides that were basic but that easy to utilize for future use. To

conclude, such tendency determined her simplified use of meditated artifacts (blog and

PowerPoint slides), making her practice of material design basic in technology integration yet

clear in purpose and teaching objective.

Contextual components affecting Teacher C's CALL material design

Rules

The rules existing in Teacher C's activity system involved the conventions in CALL

materials and the deadline for submitting the works. First, in terms of the conventions in

CALL materials, since submitting works in a contest was different from creating her own

materials in daily practice, the consideration of copyright somehow restricted the variety of

her use of online videos and audio files. As she further explained, "The host institute said you

need to write a letter to those who created the audio files…I feel like it is a lot of trouble…I

feel kind of scared because I do not know what we could do not to violate the law." (Interview

IV, September 12th, 2009).

Second, meeting the deadline was another obstacle for Teacher C to conquer as a busy intern teacher during the time of data collection. Even though she set up a schedule to design her materials in school, she was on call and constantly sent to do trivial jobs. Therefore, she stated, "The greatest obstacle to overcome is time limit, because we [I] are student teachers. For in-service teachers, it's a lot easier because they have summer and winter vacation." (Interview I, July 28th, 2009). After meeting the deadline, she attributed the reason why her materials had not attained the anticipated effects to a lack of time. As she stated, "The clock is ticking and uploading takes time…If there were more time, I could add on more pictures and make them more attractive." (Interview IV, September 12th, 2009). In brief, the rules consisting of the conventions in CALL materials and the pressure of meeting the deadline were concluded to result in restrictions to Teacher B's material design.

Community and division of labor

The community was found to affect Teacher C's CALL material design, including the award-winning classmate as well as the designers of the past awarded materials she referred to, her future teacher recruiters, and the instructor and students from the school she served her internship.

First, the award-winning classmate and the designers of the past awarded materials she referred to were found to affect her decision in contest participation and direction in her practice of material design. According to Teacher C, motivated by her classmate who won the first prize in a material design contest, she gained confidence in herself and considered winning to be realistic and mission possible. Furthermore, the designers of the past awarded materials she referred to aided her in organizing the basic skeleton for her materials, inspired her in coming up with new ideas and guided her to embark on her design with all the detailed considered. As she maintained, "I would like to see how others make those successful materials. I am less experienced and have no experience in participating in this contest. Then

if I have successful samples to refer to, you [I] would probably know what extent of work you [I] can attain." (Interview I, July 28th, 2009).

Second, since the major motive of participating in a contest was to make her resume impressive, Teacher C aimed to impress the judges in her future teacher recruitment by winning the award. As she mentioned, "Other teachers suggested that we put some creative lesson plans and materials into their reference in teacher recruitment. It would be a lot better if there is record in award-winning." (Interview I, July 28th, 2009). As a result, the consideration of the judges in her future teacher recruitment was viewed as a positive influence for her in creating CALL materials in a contest.

Lastly, as Teacher C worked as an intern at the time of data collection, the community constructed by her instructor and students from the school she served her internship might also influence her material design.

Regarding division of labor, no evident power relationship was explored in Teacher C's activity system. As the contest she participated in contained rather loose contest regulations, the results did not reveal her significant disadvantage to the host institute. In addition, as she completed the material design on her own, the power relationships were not evident in her practice of material design.

How the experience of CALL material design in a contest influenced Teacher C

The experience of participating in the contest reshaped her concepts in three ways, namely seeking partnership in creating materials, gaining new understanding in contest participation as well as technology integration. First, after the experience, Teacher C realized the disadvantage of working individually and intended to seek partners in creating materials together. As she stated, "If possible, I would like to work with a partner so that different viewpoints could be integrated. I can have mutual learning instead of fighting on my own." (Interview IV, September 12th, 2009). As a consequence, such community without a partner

was concluded to impact her outcome.

Furthermore, it should be noted that this experience had brought her new understanding in contest participation. After the experience, she paid great respect to those teachers who were willing to participate in such contests. As she further explained, "I think they really have high expectations for themselves so that they force themselves…So I look up to those teachers who participate in the contest. (Interview III, August 25th, 2009). Concerning contest participation, her willingness to participate in future contests was still strong. As she stated, "I think it's an interesting experience. It seems to be a must to force myself to do this and every year I'll produce new things no matter whether it's well-done or not." (Interview III, August 25th, 2009). Nevertheless, as positive as Teacher C might feel, the result of the contest was still decisive in affecting her future participation. As she emphasized, "I still want my efforts to be given credits, so it can prompt me to keep going. But if you [I] make efforts and rack your brain but it's still in vain, then just forget it. (Interview III, August 25th, 2009).

Finally, regarding technology integration, going against her original principle to utilize the technical skills and resources at hand, she began to seek opportunities to advance her skills and improve. As she suggested, "On seeing the awarded works, I realize that a teacher could have good technical skills such as setting up a website and making everything delicate. So in the future, I feel like taking related course in creating technology-enhanced materials."(Interview IV, September 12th, 2009). In brief, the experience of participating in a CALL-material design contest reshaped her concepts in seeking partnership, contest participation as well as technology integration**.**

Summary

The summary includes agency, meditated artifacts, practice of CALL material design, object and contextual factors consisting of rules, community, and division of labor existing in her activity system. Figure 4.22 illustrates all the components in Teacher C's activity system.

Meditated Artifacts
・ PowerPoint
・ WebQuest

Subject: Teacher C

Agency:
・ Teacher C's beliefs
・ Her learning experience in graduate school
・ Her technical knowledge
・ Her experience in CALL material design
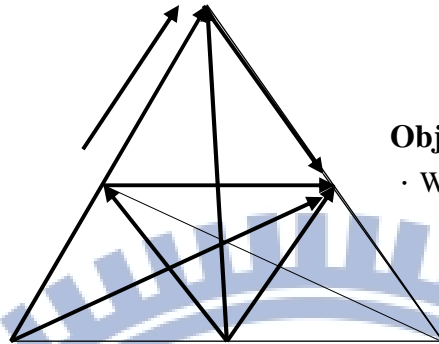
Object
・ Win the contest

⊃ Outcome
・ Find a full-time teaching job

Rules
・ The conventions in CALL materials
・ Deadline of submission: short of time

Community
・ The award-winning classmate
・ The designers of the awarded materials
・ Future teacher recruiters
・ Her instructor and students from the school she served her internship

Division of Labor

Figure 4.22 Teacher C's Activity System

In Teacher C's case, two beliefs were revealed in the study. First, under the belief that language teaching should contain a clear objective, her use of PowerPoint and blog as her meditated artifacts were far from fancy but assured with a clear purpose. Second, she believed that language teaching should include the teaching of four language skills. Such belief was reflected by her lesson plan which delicately integrated four skills based on the central theme of *Chiufen*.

It should be noted that her beliefs, learning experience in graduate school, technical knowledge and experience in CALL material design formed her agency, guiding her in achieving her goal of winning the contest (object) and eventually finding a full-time teaching job (outcome). With reference to the significance of her meditated artifacts, several interactive relations were disclosed in Teacher C's activity system. The meditated artifacts functioned as tools for Teacher C (subject) to fulfill her practice and achieve her goal of winning the contest (object). In this case, her belief (agency) about ensuring a clear objective determined her use

of PowerPoint and blog as rather simplified meditated artifacts, making her practice of design less fancy but clear in objective.

Regarding the contextual factors influencing her beliefs and practice, a few interactive relations were captured to exist in Teacher C's activity system. First, the rules played a significant role in affecting Teacher C's meditated artifacts and object. The conventions in CALL materials prompted her to abandon her meditated artifacts of some online videos and the pressure of meeting the deadline also urged her to prune down her practice of material design.

Second, as the most influential contextual factor in the study, the community caused an impact to Teacher C's subject, meditated artifacts and object. Not only did her award-winning classmate play a crucial role in motivating her, but also the designers of the awarded works also facilitated her material design in her object.

Lastly, no evident division of labor was spotted in Teacher C's activity system. As a significant power relationship with the host institute was not revealed and she fulfilled her practice independently, division of labor might not be a crucial contextual factor in her activity system.

CHAPTER FIVE
DISCUSSION AND CONCLUSION

In this chapter, I discuss the cross-case analysis of the three cases in depth to address the research questions. Then, the conclusion of the present study is presented, with inclusive of a brief summary of the study, pedagogical implications, limitations and suggestions for future study.

Discussion

The findings of the study are discussed based on the three research questions.

Research Question 1: How are teachers' beliefs in CALL and language teaching and learning reflected in their CALL material design in a contest?

How teachers' beliefs in CALL influence their practices

Examining through the lens of activity theory, the present study explored how teachers' beliefs were reflected in their practice of CALL material design. In addition, their learning background, training, previous teaching experience and preferred learning style were found to be decisive in shaping their beliefs, values in material design as well as technology integration. Based on the findings, the current study is consistent with studies which reported for the significance of teachers' beliefs on their practice (Johnson, 1992; Kagan, 1992; Kane et al., 2002; Pajares, 1992).

Among the three cases in the current study, what teachers believed was indicated to be influential in their practice of material design, especially in their choice of technology as meditation. In other words, their choice of technology reflected their beliefs on whether technology integration was facilitative or otherwise unnecessary. In the present study, holding positive attitudes toward new technology, Teacher A created webpages as her major means of presenting technology integration. Meanwhile, in the process of creating webpages, she

constantly referred to various sources for self-learning such as consulting books and signing up online computer classes, which ultimately led to her success in completion of her webpages. Conversely, holding a rather doubtful attitude toward the effectiveness and necessity of creating webpages, Teacher B resorted to PowerPoint and YouTube videos as her major means to achieve her practice of material design. With reference to Teacher C, not voicing any preference or comment toward creating webpages, she merely adopted PowerPoint and blog as her means of technology incorporation out of convenience and time-saving consideration. In line with the previous study on teachers' beliefs in CALL, such finding supported the notion that teachers' beliefs in the effectiveness of technology integration were decisive to their practice (Hsu et al., 2007). As a consequence, the uncertainty toward the effectiveness of technology and the attempt to seek for convenience resulted in their restrictions in their choice of technology. These results revealed that all three teachers' beliefs could influence their practice through the meditated artifacts they adopted.

How teachers' beliefs in language teaching and learning influence their practices

The study results indicated that situated in the context of a contest, three common themes in language teaching and learning were strongly associated with three teachers' material design, including (a) their preference for creating attention-getting and attractive materials, (b) their consideration to involve learners in their materials, and (c) the demonstration of their professional knowledge. These common themes strongly shaped subject agency and further led to their practice of material design.

First, in creating materials, all of the teachers demonstrated preference to make efforts to attract the attention of learners and users. The finding also confirmed the statement of Shneiderman (1987) in suggesting the significance of understanding learners' traits and the learning context in CALL design. In this study, Teacher A realized such preference by creating vivid lesson plans, adding photos and videos from various resources whereas Teacher B

utilized attractive PowerPoint, YouTube videos, and real-life examples like horoscope and fortune telling. However, with insistence on ensuring a clear objective in language teaching, Teacher C did not make her materials fancy to the learners but devoted herself in creating illustrative lesson plans and blog. It seemed that in an attempt to excel in a contest, some teachers believed that the more attractive their materials appeared, the more chances they were likely to win.

Secondly, their consideration to involve potential learners in their materials was also transparent in their design in (a) including student-centered tasks, (b) selecting topics that were close to students' everyday life, and (c) guiding students in developing critical thinking skills. The finding was in accordance with the previous study in terms of the dynamic and interactive nature of CALL design. As Levy (2006) proposed, one of the qualities of CALL design was the creative process of involving dramatic change and receiving feedback from the learners. Consequently, rather than impart knowledge and design one-way lecture, the three teachers attempted to enable students to actively perform in carrying out tasks, respond to the questions, develop their thinking skills, as well as make connections to the materials. Such design was believed to lead to intense student-student and student-teacher interactions, making their materials more dynamic and interactive in quality. Consistent with previous studies on the benefits of self-made materials (Hutchinson & Torres, 1994; Littlejohn, 1992; Levy, 2006), the findings confirmed the notion that teachers could indeed develop diverse teaching materials to suit different requirements, match learners' need and different learning styles (Shih, Tseng & Yang, 2008). Additionally, the result was compatible with the finding from literature (Taylor & Thomson, 1982), which highly suggested that in using CALL materials, it was how learners were engaged with the materials, text or picture that was truly decisive.

Lastly, despite as pre-service teachers, the three teachers all displayed professional knowledge, insistence, and beliefs in language teaching and learning, making their practice

full of diversity. In agreement with previous research which proposed that teachers who have received teacher education training would better establish their beliefs and determine their practice (Florio-Ruane & Lensmire, 1990; Wilson, 1990), the findings revealed that the teachers' perceptions and beliefs were indeed strongly affected by their professional training. As shown in the result of the study, Teacher A designed lesson plans that were detailed in teaching procedures and guiding students in performing student-centered projects. Teacher B's emphasis on culture integration and critical thinking contributed to the diversity of her material design. Among the participants, Teacher C was the one who insisted on ensuring a clear teaching purpose and the integrated four language skills. Their practices of material design were found to some degrees demonstrate their professional knowledge conforming to the core values and principles of language teaching and learning.

Inconsistency between teachers' beliefs and practices

There is no doubt that the findings support previous studies on factors that contributed to the gap between teachers' beliefs and practices, such as insufficient training in technology integration and contextual constraints (Cuban, 1996; Egbert et al., 2002; Feiman-Nemser & Remillard, 1996; Hadley & Sheingold, 1993; Hsu et al., 2007; Sherwood, 1993). Among the three cases, the materials designed by Teacher A were pinpointed to be against her belief due to the consideration of contest regulations. On the other hand, Teacher B and Teacher C both maintained that in an attempt to meet the deadline of submission as busy intern teachers, the materials they accomplished were rather more simplified than their original goal yet not to the point of violating their beliefs.

One particularly interesting fact highlighted by the result was that although intending to create interesting and attractive materials, Teacher A submitted to contest regulation and thereby used outdated and unattractive photos as well as videos from the assigned website, making her material design against her belief yet appealing to host institute. Additionally, in

following the contest regulation, the prevalent use of Mandarin on her webpages somehow failed to achieve the effectiveness of language leaning. As a result, it can be inferred that situated in the context of contest, teachers would have to compromise between their beliefs and the rules that might bring them award and acknowledgement in a contest.

Research Question 2: What underlying factors mediated the process of their participation of the contest?

Drawing on activity theory, the current study revealed that agency, meditated artifacts, object, and contextual factors, inclusive of rules, community, and division of labor all reported to have an impact on teachers' participation of the contest.

Agency, object, and outcome

Among the three cases, teachers' beliefs, training, and experience in teaching, material design as well as contest participation formed strong agency in guiding the teachers to fulfill their practice of material design (object), attain their goal of finding a full-time teaching job and enhancing self-confidence (outcome). In Teacher A's activity system, her experience in teaching and designing textbooks as well as her beliefs were found to shape her agency. As for Teacher B, the findings indicated that in addition to her beliefs, her classmates from graduate school, positive experience in teaching and contest participation were decisive in forming her agency. Finally, in Teacher C's case, her agency was formed because of her beliefs, training and learning experience in graduate school and her experience in CALL material design.

With the above-mentioned agency, the three teachers all attempted to reach the same object of achieving their practice as well as winning the contest and therefore attain their outcome of finding full-time teaching job and self confidence.

Meditated artifacts

The findings of the study indicated that both Teacher A and Teacher B adopted various meditated artifacts to fulfill their objects of achieving CALL material design. Based on the interviews and document analysis, it is suggested that both Teacher A and Teacher B attempted to vary their material design by utilizing numerous activities, useful materials, and interesting topics. For instance, Teacher A utilized a variety of input sources (PowerPoint slides, worksheet, webpages, pictures, videos), interesting topics (festival, fables and stories), student-centered activities (project-base learning, competition game), and illustrative descriptions (teacher's monologue, vivid pictures). In the same way, Teacher B also implemented diverse input sources (illustrative PowerPoint slides, YouTube videos, commercial, worksheet, pictures), numerous teaching focuses (poem, songs, culture), close-to-life topics (fortune telling, horoscope, superstition), and activities that develop students' critical thinking skills (scenarios, discussion on cultural difference). By contrast, due to the limited time and tendency in utilizing only the available resource at hand, Teacher C adopted fewer meditated artifacts such as input resources (PowerPoint, blog, pictures), close-to-life topic (*Chiufen*), comprehensive training (integrated four skills), and activities that enhance student participation (WebQuest activities). It was suggested that by means of the above-mentioned materials, topics, and activities, the materials were found to demonstrate variety that corresponded to teachers' attempt to outstand their materials in the contest.

Interestingly, since the material design was concerned with technology integration, part of the meditated artifacts referred to their choice of technology. For example, as Teacher A used webpages to represent her way of technology integration, her high reliance on the Internet and the assigned website *Digital Archives* were thereby determined. Concerning Teacher B's case, believing in creating attractive materials, she adopted YouTube videos and illustrative PowerPoint slides as her major means of technology integration. Nevertheless, due to the reluctance to learn new technology, Teacher C implemented PowerPoint and blog, the forms

of technology that she was most familiar with, to represent her way of technology incorporation.

Corresponding to past literature on meditated artifacts, the study confirmed the notion that "human on most occasions interpose a meditational artifact between themselves and the object of interest, thereby enabling them to act more effectively" (Wells, 2002, p.46). In the study, the three teachers achieved their objects of completing their CALL material design by adopting various mediated artifacts. Also noteworthy is that their choice of meditated artifacts could reflect their beliefs and perceptions in CALL and language teaching and learning accordingly.

Rules

The rules in the present study were primarily established within the contest, including contest regulations, conventions in CALL materials, and the deadline of submission. In the three cases, the rules were found to greatly influence teachers' belief (agency) and their use of technology (meditated artifacts), create confusion and tension to the teachers (subject), and cause restrictions to their practice (object).

First, situated in the context of a contest, both Teacher A and Teacher B reported to be strongly affected by contest regulations that were either strict in the demand of technology and source of information or ambiguous in the desired format. Following the contest regulation prudently, Teacher A made compromise and even gave up her belief in creating interesting materials just to make her materials qualified for the contest. As for Teacher B, ambiguous contest regulations added uncertainty to her subject and resulted in the gap between her materials and the awarded ones desired by the host institute. Among the three cases, Teacher C seemed not disturbed by contest regulations. The results revealed that in participation of the contest, the embedded rules could cause either restrictions or confusion to teachers.

Second, the conventions in CALL materials were found to limit meditated artifacts and object. Although Teacher B seemed to convey no further comment, both Teacher A and Teacher C suggested that the consideration of copyright restricted the variety of their resource and use of videos and pictures, giving their material design less diversity than their goals.

Third, the pressure of meeting the deadline caused an impact on the subject, meditated artifacts and object. Under the tension of submitting the materials, all of the three teachers reported to abandon the use of complicated technology and merely seek for finishing their work before the deadline. Given that participating in the contest established rules different from classroom practice, it could be inferred that teachers' beliefs and goals required modification or even compromise.

Community

The findings of the study highlighted the significance of community on subject, meditated artifacts as well as object. Among the three cases, all the teachers reported to seek inspirations, reference and solutions from designers of awarded materials, online resource and books in the process of creating materials. Consequently, it could be indicated that these people in the community was facilitative for the teachers to achieve the object. Interestingly, situated in the context of a contest where winning was a primary goal, the three teachers all revealed their consideration of the judges and competitors in the contest and attempted to make their material design outstanding. Furthermore, as their common goal of participating in the contest was to add value to their future teacher recruitment, the consideration of future recruiters was found to motivate them and strengthened their willingness of contest participation.

Finally, Teacher B reported to feel supportive working with her partner while Teacher A and Teacher C both voiced their need to seek for partnership and support in their future material design experience. As a consequence, among the contextual factors, community is concluded to result in a positive impact on teachers in terms of finding ideas and solutions,

enhancing motivation, and building up support in the process of creating materials in the contest.

Division of Labor

Among the contextual factors, division of labor was found to be the least significant factor influencing teachers and their material design. As the distribution of power relationship was addressed, the relationship with the host institute and the partner were pinpointed to impact on the meditated artifacts and object in the present study.

First, acting prudently toward contest regulations, Teacher A seemed to be at disadvantage for attempting not to violate the regulations and following the rules step by step. Conversely, Teacher B and Teacher C did not voice similar concern due to the loose and ambiguous contest regulations entailed in the contest they participated in. It could be revealed that in the context of contest where the host institute was at relative advantage, teachers would have to make compromise and distribute their power to the host institute just to win the contest.

Second, among the three cases, Teacher B was the one who worked with a partner. Although Teacher B gained help and shared the workload by working with her partner, she had the full power in deciding her material design due to their separate responsibilities. It is suggested that such division of labor empowered teachers in designing the materials they desired while gaining benefits from the collaboration.

Research Question 3: How does participating in the contest influence teachers' beliefs and teachers in terms of material design, technology integration and contest participation?

In the present study, the findings did not capture the change in teachers' beliefs in general. Among the three cases, although Teacher A's belief was constantly conflicted by the contest requirement, her belief that language teaching should be attention-getting did not change from

her attempt to make compromise. As for Teacher B and Teacher C, based on the interviews and document analysis, the change of their beliefs was not explored due to the consistency between their beliefs and practices. Similarity, their belief that technology integration could be facilitative to language teaching was also not found to undergo drastic change. It could be inferred that teachers' belief is rather fundamental and less likely to undergo drastic change due to a particular short-term event. Nevertheless, despite there was no change in beliefs discovered in the current study, the participation of CALL material design contest brought both positive and negative impacts on teachers in terms of material design, technology integration and contest participation as illustrated in the following section.

Among the three cases, the practices of CALL material design in the contests were pinpointed to bring new understanding in technology integration as well as material design to teachers and their beliefs. For example, Teacher A reported a change of her perception toward creating webpages. Although such effort was regarded as time-wasting and painstaking during her process of creation, Teacher A demonstrated a sense of pride in possessing such technical skills. In addition, she also pinpointed that the webpages were more facilitative than lesson plans for they could be open to more teacher users in putting the designed materials into classroom practice.

Regarding Teacher B, despite still feeling doubtful toward the significance of creating webpages, the over reliance on YouTube videos in her practice urged her to rethink the meaning of such form of technology and prompted her to seek new means of technology integration in her future teaching career. Finally, in Teacher C's case, after the completion of her material design, she realized her insufficient training in technology integration and thereby voiced her attempt to update herself in learning new technical skills and operating software. It seemed that the designing process could be facilitative in reigniting teachers' enthusiasm and willingness in learning to incorporate technology into their practice.

Seeking acknowledgement and adding value to future recruitment are concluded to

motivate teachers in participation of contest. Because of that, the findings indicated that the result of the contest could determine the chance of their future participation. In the study, Teacher A revealed her sense of accomplishment and regarded the experience as a process of finding a better self after winning the third prize. On the other hand, not winning any prize, Teacher B and Teacher C merely claimed that they would act more prudently toward the requirements of the contest in future participation, if any. Additionally, as creating CALL materials in a contest was time-taking and painstaking, both of them suggested that they would evaluate carefully whether it was worthwhile to invest their time and efforts before making any decisions. In brief, since teachers' primary goal of contest participation was winning, the results were concluded to have an impact on their future participation.

On the other hand, several negative impacts of contest participation were spotted as follows. First, Teacher A reported a sense of loneliness working without a partner. In a contest where the requirement of designing webpages, lesson plans and worksheets had to be fulfilled, working without collaboration could be challenging and overwhelming to teachers. In addition, she also pinpointed that in order to follow the contest regulations, the materials she designed might overlook learning effectiveness, which made her later reflect on the significance of participating in such a contest. Second, it was found that Teacher B expressed discontent toward the vague contest regulations and doubt toward the significance of creating webpages. Since most of the award-winning materials were creations of webpages, she also questioned the host institute might expect teachers to play the role of a computer expert. Lastly, Teacher C also maintained that the heavy workload entailed in a contest overwhelmed her when she worked independently. Like Teacher B, the result that she did not win the award in the contest frustrated her and let her feel that her efforts and time were in vain.

<center>**Conclusion**</center>

Summary of the Study

Drawing on activity theory, the study explored teachers' beliefs and practices of three pre-service teachers in CALL material design contests and discussed the underlying factors that mediated their process of participation. By means of semi-structured interviews and document analysis of their material design, the study attempted to investigate three pre-service teachers' beliefs, practices, and the contextual factors influencing the relations between their beliefs and practices. Moreover, it also examined how the specific experience of contest participation influenced their perceptions of CALL and material design in their future teaching career.

By means of cross-case analysis, the present study addressed three research questions. Three significant issues were raised in Research Question 1. First, in terms of technology integration, the impact of teachers' beliefs on their practices was evident on their choice of technology. With different attitudes toward technology, their choice of technology and CALL material design varied accordingly. Second, the study captured several similarities in teachers' material design where the significance of professional training was highlighted. Third, the inconsistency between teachers' beliefs and practices was found to result from contextual factors which impeded teachers to implement technology into their materials and urged them to make compromise with their beliefs.

In Research Question 2, the study examined several underlying factors that mediated teachers' participation of CALL material design contest. First, the teachers used meditated artifacts to fulfill their practice and their choice of technology was viewed as their way of technology incorporation. Second, the rules established within the contest were found to cause restrictions, confusion or tension, which teachers had to make compromise or even conflict their original belief and goal. Third, the community was concluded to have a positive impact on teachers in providing support, giving source of information and offering stimulus in

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material design and contest participation. Finally, regarding division of labor, in the context of contest, part of teachers' power was distributed to the host institute while teachers could still have full power with separate responsibilities with the partner.

Finally, in Research Question 3, despite no drastic change in teachers' belief was spotted, the impacts of participating in a CALL material design contest on teachers were worth mentioning. First, a positive influence on teachers' perception toward technology use was captured after contest participation. Second, the call for further training was made by teachers as the experience helped them realize their insufficient skills. Third, the result of the contest was found to be decisive in their self acknowledgment and future contest participation.

Pedagogical Implications

Since technology integration has been a trend in language teaching in recent years, examining the process of participating in a CALL material design contest may shed lights on the field of CALL and material design. Four pedagogical implications drawn from the present study are stated as follows.

First, since participating in CALL material design contests was found to be facilitative to teachers in gaining new understanding toward how technology could be better integrated and how materials could enhance learning, the present study could provide valuable implications to teachers who intend to design CALL materials. Additionally, the study indicated that contest participation could serve as mediation to urge teachers to produce materials that could be utilized in their future classroom use. In this regard, it is highly suggested that teachers should be encouraged to participate actively in relevant contests with the advantages entailed in the study.

Second, as the findings of the study highlighted the significance of community, it is recommended for teachers to search for collaboration in creating materials, either technology-integrated or not. By means of such collaboration, teachers would be provided

with timely help as well as opportunity to exchange ideas and solve problems together.

Third, although the experience of material design was contended to have a positive impact on the teachers, the fundamental quality of contest was evaluation. Since the findings suggested that the results of the contest could determine teachers' confidence and decision in future practice, it will be better if the administrators are able to consider hosting non-judgmental events such as teacher training courses to train teachers how to realize their belief in their practice and not to the extent to impacting their confidence.

Finally, since the current study was situated in the context of contest, it is concluded that contest regulations may create limitations, tension and confusion to material designers in contest participation. In this regard, it is of vital importance for host institutes and judges to understand more about teachers' needs and concerns. Therefore, it is highly recommended that the host institute could include perspective of teachers in constructing the contest regulations and therefore making contest participation a more realistic and meaningful event.

Limitations of the Present Study

The design of the present study is not without problems. First, the recruited three pre-service teachers participated in the contest with the purpose to add value to their future teacher recruitment rather than to fulfill the passion of designing CALL materials. Therefore, whether pre-service teachers would continue material design or utilize the materials designed for the contest when they become in-service teachers remained uncertain. Second, despite complex factors were a major research focus in the study, the results might differ greatly due to different contest regulations entailed in the two different contests. Although it would be more appropriate to limit the research setting to one contest, the study failed to recruit teachers who participated in the same contest due to the difficulty in recruiting the participants. Third, the participants in the study were mainly recruited from the same institute out of convenience sampling. Since the research finding suggested that training was a crucial

factor determining their CALL material design, the study somehow lacked the variety in selecting the participants. Finally, although the research topic was regarding teachers' beliefs and practices in CALL material design, the primary focus of the research finding was mainly on material design rather than technology integration. Since the participants of the study mostly adopted basic forms of technology, the research scope on technology integration was accordingly restricted. With the limitations of the present study addressed above, several recommendations for future research are stated in the following section.

Recommendations for Future Research

   The study explored three pre-service teachers' beliefs and practices in CALL material design contest and pinpointed the contextual factors mediating their participation as well as the influence on their professional development. Several recommendations for future research are made as follows. First, since the materials were specifically designed for a contest, how teacher participants utilized the materials into their classroom practice and how their students responded to such materials would be another topic worth exploring in future studies. Second, the present study failed to contain the perspective from the host institute of the contest. Therefore, future research could examine perspectives from both teacher participants and the host institutes. Since the study revealed that teacher participants had little idea what was expected and only made inference from observing the past awarded materials, by doing so, the gap between teachers' material design and the awarded material design could be bridged. Third, in investigating technology integration, it would be recommended to recruit teachers who possess more advanced technical skills. In this regard, as handling technical problems no longer be a major limitation, other contextual factors could be left for future researchers to explore. Finally, since the present study recruited only pre-service teachers whose beliefs were shaped mainly by their training and part-time teaching experience, future investigation may recruit both in-service teachers and pre-service teachers to examine the significance of

contextual factors in affecting their beliefs and practices.

The present study reported how teachers designed their CALL materials in preparation for the contest through a theoretical perspective of activity theory. By exploring teacher's beliefs and practices in CALL material design with the associating factors, hopefully the study can provide contributions to studies of teachers' beliefs and CALL materials to the literature.

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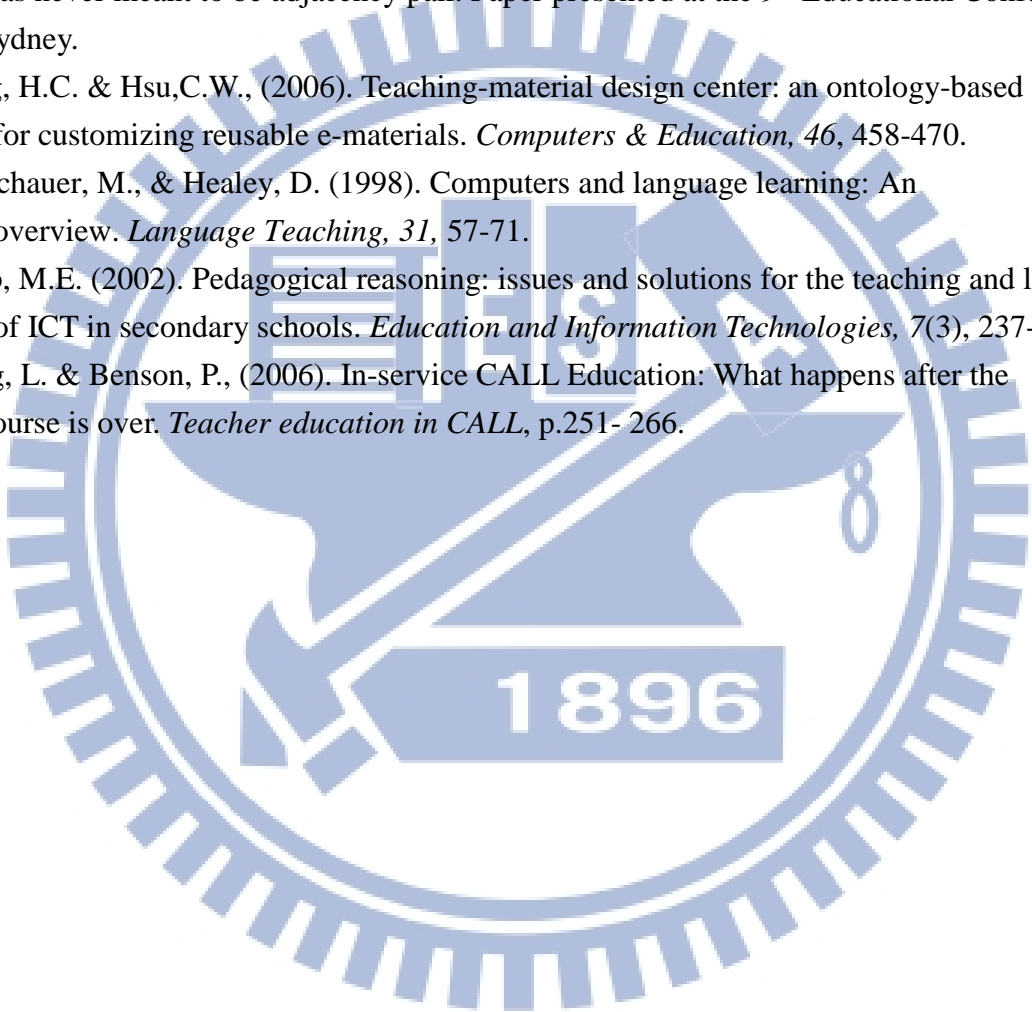
APPENDICES
Appendix A: Consent Form

訪談同意書

由參與資訊融入教學競賽來探討教師歷程及運用電腦輔助教學的情況

老師您好，感謝您參與這個研究，共同探討教師參與資訊融入教學競賽的歷程及對未來使用電腦輔助教學影響。我是李明倩，目前是國立交通大學英語教學所碩士候選人，這個研究是我的碩士論文，希望能夠了解您參加競賽的歷程以及參賽後未來的應用。

如果您同意參加這個研究，我會與您面談並在不打擾您的狀況下，以質性研究的方式深入探討(訪談、填寫問卷的方式)。希望藉由訪談，來了解您參與競賽的情形，訪談時間將會是 30 分鐘到 40 分鐘，間隔時間莫約一周或二周一次，而且將會錄音。這種面談不會有任何風險，而且錄音檔案將妥善保存在研究者的住處，只有研究者在做研究時才能聽到錄音檔案。另外，為了了解參與老師參加過程的實際狀況，希望參與者能紀錄製作過程、並在准許下提供相關資料。資料並不會有任何風險，只會提供研究需求，會在研究分析結束後銷毀，您的個人資料也將被完全保密，不會顯示在研究內。參與過程中，為了保障您的權益，您可以隨時退出研究。感謝您的參與，過程中您可以隨時用電話或是信件與我聯繫。我的電話是 0915028239，電子郵件是 tifflee1113@yahoo.com.tw ，再次感謝您的參與。

_____   _____   _____
參加者簽名   (電話)   (日期)

_____
研究者簽名

Background Information

1. How long have you been teaching as a part-time teacher?

2. Do you have any experience in participating in any forms of contests, such as drama contest, speech contest, or contest concerning designing materials?

3. Do you have any experience in material design?

Before participation

1. What are the motives of your participation? Is it important to your career?

2. What might be the hindrance of your participation? (e.g. limited time, etc.)

3. What kinds of contest motivate you to take part in?

Beliefs and experience in using computer to assist teaching

1. In what ways do you use computers?

2. What prior experience do you have with the use of technology? How did you learn? E.g. was it self-taught or through pre-service teaching?

3. What was your first experience of using computers in your classroom?

4. How do you use computer in your teaching? Do you enjoy it?

Beliefs and experience in designing CALL material

1. What is the most valuable part you learn from the process?

2. What is the biggest challenge or limitation you have in designing the technology-integrated material?

3. Does the process change your use or belief about integrating technology in teaching?

4. Do you use technology-integrated material you design in the contest? How does it affect your teaching and your students' learning?

5. Does the process motivate you in the use of technology in teaching? What implications do you get from the process?

6. Will you participate in other technology-integrated contests in the future?

Appendix C: Interview Questions during and after the Design Process

Interview Questions during and after the design process

1. Describe the process 請概述這期間你做作品的<u>過程</u>，包含運用科技、設計教材、網路資源…等面向。

- 設計教材
- 運用科技、媒體
- 運用資源

2. Tell me something about your current product at this stage. What makes you want to choose the topic / present it in this format ,etc? 談談你這階段的<u>作品本身</u>，為何你會想新加入….元素 / 為何你會想如此呈現?

3. Does the current product meet up your expectation? How is it different from your plan? If there is difference, what factors contribute to the difference?
現階段的作品有達到你的期待和目標嗎? 你本來的期待和目標是什麼?
哪裡有落差? 如果有不同的話是哪些因素造成的?

4. What is the difficult part at this stage? What have you overcome and what do you want to overcome? 現階段哪部分是最困難的? 這期間你克服了什麼問題？下階段要克服的可能是什麼?

5. At this stage, do you perceive any improvement? What areas do you perceive to have the greatest improvement? (e.g. the ability and skills to create material, the use of technology, the access in tapping into online resource? key points in participating in the contest?) 在這期間你有感受到本身任何的進步嗎? 像是科技的使用、設計教材的能力及技巧、運用資源的能力、對參與比賽的認知?

Questions after Contest Participation

1. Do you enjoy the process of participating in the contest?

2. Does the process change your use of material, teaching method, or the use of technology?

3. Do you use the material you design in the contest? How does it affect your teaching and your students' learning?

4. How does the process influence your future career development or what implications do you get from the process?

5. Will you participate in other contests in the future?

Contest One

典藏・新實

2009 年數位典藏與數位學習教學活動設計競賽辦法

一、競賽目的

　　本競賽之目的，在鼓勵教師運用數位典藏與數位學習國家型科技計畫產出之豐富資源成果內容，融入教學活動之中，並製作出符合教學所需的教材，促使更多教師與學生得以在不同的教學與學習領域中，使用豐富變化後的教材，創造「教」與「學」的對話空間，以提昇教學品質，營造更完善的教學環境。

二、舉辦單位

　（一)指導單位：行政院國家科學委員會、數位典藏與數位學習國家型科技計畫
　（二)主辦單位：數位典藏與學習之學術與社會應用推廣分項計畫辦公室

三、競賽分組

　（一)高中職組
　（二)國中小組

四、參賽資格與方式

　（一）、參賽資格
　　　1. 全國公私立高中職現職教師、實習教師。
　　　2. 全國公私立國中小學之現職教師、實習教師。
　　　3. 師範院校或修習教育學程之在學學生
　（二）參賽方式：
　　　1.個人參賽：需符合前項參賽身份之規定。
　　　2. 團隊參賽：
　　　　a.團隊至多以五人為限（含五人）。
　　　　b.團隊成員可包含非上述參賽資格身份之社會人士，但至少有一人符合前述參賽身份。惟非上述參賽資格身份之參賽者，人數不得超過團隊參賽總人數之半數。
　（三）個人可同時報名個人組與團隊組。
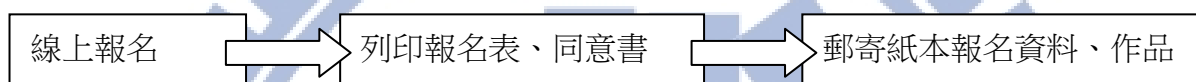
（四）個人或團體之作品，參賽件數不限一件，每一參賽作品需分別繳交報名表及作品。

五、比賽時程

- 線上報名截止日：2009 年 10 月 23 日（五）
- 初審交件截止日：2009 年 10 月 30 日（五），以郵戳為憑
- 第一階段初選結果公告：2009 年 11 月底
- 第二階段決選結果公告：2009 年 12 月底
- 頒獎典禮：2010 年 1 月

六、參賽流程及相關事項

參賽流程分**線上報名**、**寄送作品**兩階段：

線上報名 ⟹ 列印報名表、同意書 ⟹ 郵寄紙本報名資料、作品

（一）線上報名
1. 報名網址請至 http://aspa.teldap.tw/competition/
2. 線上填寫報名表後，列印報名表、創用 CC 授權同意書、著作權授權同意書（素材取得）。
3. 所有作者於報名表、同意書上簽名。

（二）郵寄資料 check list
1. 比賽報名表
2. 創用 cc 授權同意書（具所有作者之簽名正本）
3. 著作權授權同意書（素材取得）
4. 相關證明文件
   - 現職教師請附上合格教師證影本乙份。
   - 實習教師請附上實習教師證正反面影印本乙份。
   - 實習學生請附上實習學校開立之服務證明正本乙份。
   - 師範院校學生請附上學生證正反面影本乙份。
   - 修習教育學程學生請附上學校所開立之證明正本。（修習教育學程證明書，請至本競賽下載專區下載，並蓋有學校核章）
4. 參賽作品，內容包含：
   （1）書面資料：教學檔案書面資料五份。
   （2）光碟一份，內容需有
   a. 教學檔案之電子檔。
   b. 所製作之教材（限以 html 格式）、配套教材之電子檔。

c. 教學成果（附學生作品範例更佳）。

d. 教學經驗分享或教學演示（可用影音檔或照片附上文字說明）。

【備註】上述要求中之第 a、b 項為必要項目，第 c、d 項為加分項目（可附可不附）。

　　上述資料，請於收件截止日前，以掛號郵寄至 10617 臺北市羅斯福路四段一號 台灣大學國家發展研究所 317 室 教學活動設計競賽籌備小組收（以郵戳為憑）。主辦單位收到作品，會以 E-mail 確認函告知參賽者作品寄達收悉之事實，始完成作品繳交程序，逾期恕不受理。

　　若參賽者於完成報名及送件手續後一週內，仍未收到確認函，請電洽(02)3366-3721 詢問。

七、作品內容要求

（一）**教學活動設計應必須至少應用一個數位典藏網站內容。網站內容請參考：**

A. 典藏，數位，台灣！成果入口網 http://digitalarchives.tw

B. 數位典藏與數位學習國家型科技計畫 http://teldap.tw

C. 拓展台灣數位典藏計畫 http://content.teldap.tw

D. 數位島嶼 http://cyberisland.ndap.org.tw

（二）教學設計應兼顧教材與學生的關聯性、知識間的關係性與整合性、及教材蒐集之多元性與應用性。

（三）教學活動設計的授課時間以二到四節課為原則。

（四）教學領域（學科）可單一領域（學科）或跨領域（學科）。

（五）歷屆教學活動設計競賽成果作品，請參考 http://dlm.ntu.edu.tw/02_1.htm

八、作品格式要求

（一）作品不限字數，但以精簡為宜。

（二）為公平起見，教材作品中請勿出現參賽者姓名。若出現評審將酌予扣分。

（三）作品中若有引用或擷取圖片、影像、文字等資源，請務必在引用處下方標明來源出處。

（四）完整之教學檔案內容應包含：

a. 教案設計：內容至少應包括活動設計之名稱、教學主題、設計理念、教學對象、教學領域（科目）、教學架構、教學流程及參考資料，並註明使用之主題網站及網址路徑（其中「所使用之數位典藏與數位學習網站」為必填欄位，作品與典藏素材之連結度為重要評分標準，未填寫者視為未繳交作品說明書，取消參賽資格）。**教案格式請至下載專區下載。**

b. 學習單

c. 補充教材（選擇性提供）

（五）教學活動可包含多個數位內容：

a. 教材限以網頁(Html 格式)形式製作，製作 HTML 檔時請務必使用相對路徑。

b. 教材首頁格式：作品名稱/index.html。

（六）為協助得獎作品之後續推廣，並提高使用者播放平台之相容性，投稿作品宜使用常用之瀏覽工具（如 IE）；若需額外使用外掛特定程式時，此程式必須為網路上可取得之免費或共享軟體（freeware），並請於作品上註明軟體名稱。

（七）建議以瀏覽器最佳瀏覽解析度：1024*768pixel 為標準。

九、評審方式與標準

本競賽將聘請專家、學者擔任評審委員，進行兩階段之評比。

（一）第一階段初賽採書面資料審查，入圍之作品方可進入第二階段決賽。

（二）本次活動之評審將以符合本案目標（適切運用數位典藏計畫網路資源）且具創意與應用價值為主要考量。評分標準如下：

項目	內容說明	配分比例
教學活動設計暨教材	運用數位典藏網站內容之比重	40%
	數位典藏網站融入教學活動設計說明	10%
	● 教學活動設計內容與流程設計 ● 教材資源設計 ● 學習成效評量設計 ● 素材選擇、運用適切性	50%
加分項目	教學成果、經驗分享或教學演示（可提供任何實際運用參賽教案於課堂上的相片、影音檔或學生作業等，形式不拘。）	最高可加總分 5 分

十、結果公布與獎勵辦法

第二階段決賽，將進行現場試教，以確認最後之獎次，無法出席決賽則視同放棄。

初賽、決賽之得獎名單，將於時程內公告於「2009 年數位典藏與數位學習教學活動設計競賽」網站（http://aspa.teldap.tw/competition/），並以 Email 與電話通知得獎者。

【備註】網站僅公佈比賽名次結果，不公開評審成績。

本競賽獎勵方式如下：

（一）擇優錄取前三名，另錄取佳作三名及入選若干名，贈送獎金、獎狀或獎品等，以茲鼓勵。

（二)所有入選作品，將於數位典藏與數位典藏學習相關資源網站長期展示，供全國教師瀏覽使用。

（三)為維持本次得獎作品之水準，若作品水準或件數不足，活動單位可視情況調整名額、獎項或依評審意見予以從缺。

（四)錄取名額及給獎方式如下

　第一名：每組各錄取一名，可得獎金新台幣 8 萬元、每人團體獎狀乙紙。

　第二名：每組各錄取一名，可得獎金新台幣 5 萬元、每人團體獎狀乙紙。

　第三名：每組各錄取一名，可得獎金新台幣 3 萬元、每人團體獎狀乙紙。

　佳　作：每組各錄取三名，可得獎金新台幣 1 萬元、每人團體獎狀乙紙。

　入　選：每組各錄取若干名，各得精美紀念品一份並頒發獎狀乙紙。

十一、授權規定

（一） **參賽者於報名時需繳交簽署之**創用 CC 授權同意書（具所有作者之簽名正本）。主辦單位對於該作品得以創用 CC『姓名標示－非商業性－相同方式分享』台灣 2.5 版對不特定之公眾授權。

（二） 參賽作品以未曾發表者為限，參賽者須於報名表中簽署未曾出版或發表之承諾，且不得侵害他人著作權。若作品經人檢舉或告發涉及上述情事，並經確認屬實者，主辦單位得取消其得獎資格，並追回原發之獎金、獎狀、獎品。參賽者對其涉及侵權之作品，須自行負責一切法律責任。

十二、其他注意事項

（一） 得獎者須於比賽得獎公佈後一個月內，依據評審建議修改得獎作品並上傳，以便提供數位典藏與數位學習國家型科技計畫對外推廣。

（二） 得獎者之獎金須依照我國規定扣稅：依稅法規定獎項價值超過新台幣 20,000 元者，主辦單位依法代得獎者扣繳 10%稅額。

（三） 上述活動內容說明若有未盡事宜，得由主辦單位更改公佈之。

（四） 請隨時上網注意「2009 年數位典藏與數位學習教學活動設計競賽」網站（http://aspa.teldap.tw/competition/）之比賽相關資訊。

十三、聯絡方式

2009 年數位典藏與數位學習教學活動設計競賽

聯絡人：胡小姐

電話：(02）3366-3721

地址：10617 台北市羅斯福路四段一號 台灣大學國家發展研究所 317 室

競賽網址：http://aspa.teldap.tw/competition/

臺北市98年度高級中等以下學校及幼稚園多媒體單元教材甄選計畫

一、目的：為配合課程創新，充實各級學校多媒體教材，以豐富教師教學發展提昇教學品質。

二、主辦單位：臺北市政府教育局

三、承辦單位：臺北市教師研習中心

四、甄選對象：本甄選活動分國小（含幼稚園）、國中、高中職三組選拔，全國公私立中小學校現職教師（含代理代課教師）及實習教師均可以個人或團體方式報名參加。

（一）【個人報名】：限現職合格教師。

（二）【團體報名】：最多 3 人且至少須含 1 名現職合格教師。

五、甄選作品類別：本次甄選作品分成：（一）多媒體教材（包括：1.媒體單元教材、2.數位學習教材）（二）教育經典短片、及（三）校園紀錄片等三類別。茲分別說明如下：

（一）多媒體教材：

1.媒體單元教材：依據教育部九年一貫課程綱要與分段能力指標，運用媒體素材，例如文字、圖片、動畫、聲音、影片等作成的媒體單元教材。

2.數位學習教材：依據教育部九年一貫課程綱要與分段能力指標，運用媒體素材，例如文字、圖片、動畫、聲音、影片等經過整合設計而達成具有互動、情境、視覺化之學習教材。

（二）教育經典短片：教育經典短片內容主要能夠做為引發學生學習動機、增加教學活潑性或能引發學生自省相關內涵之影音

（三）校園紀錄片：以校園場域為主要議題的紀錄片，取材內容可以師生、家長、親師、同儕等彼此互動之間的感人事蹟，或值得紀錄的校園生活，其內容應具有教育意涵並能引發學生學習或自省之紀錄片為考量。

六、甄選作品支援規格：

（一）媒體單元教材：格式請以*.htm(網頁檔)、*.html(網頁檔)、*.pdf(AdobeReader 檔)、*.doc(MSWord 文件檔)、*.txt(一般文字檔)、*.ppt(MSPowerPoint 簡報檔) 、*.xls(MSExcel 資料檔)、*.swf(Flash播放檔) *.flv(Flash 執行檔)、、*.css(HTML 文檔) *.js(JavaScript)、*.jpg(圖檔) 、*.bmp (圖檔)、*.gif(圖檔)、*.pcx(圖檔)、*.png(圖檔) 、*.tga(Targa 全彩圖形檔)、*.tif(TIFF 格式圖檔) 、*.ico(Windows 的圖示檔)等 普遍格式為宜 檔案總容量請勿超過 30MB（小於 30MB）。

（二）數位學習教材：格式請以可結合音視訊與教案，並能產出 html 連結檔之製作軟

體為主，如由 MS Producer、Easy Studio、Stream Author、Screen Watch Producer 等製作檔案格式，檔案總容量請勿超過 30MB（小於 30MB）。

(三）其他注意事項：

1.作品製作儘量以坊間現有之『常用多媒體製作工具』為主，避免使用特殊工具，以利未來推廣使用。

2.作品內容以自行開發與編製為主。不得連結其他網站或運用非經授權圖片、影片、音樂等為內容；且作品之版權不得為授權其他單位使用。

3.須備完整安裝程式、教材執行程式及操作手冊（至少詳述使用硬體、基本配備需求、安裝程序軟體操作方法、教學指引或課程學習大綱等）。

4.甄選作品（校園紀錄片須再寄送光碟作品）須上傳所有該作品的所有檔案至甄選活動網站伺服器上，參選者不得將其作品內的檔案連結至外部伺服器上。

七、繳交作品內容說明：繳交作品前請務必確認所有檔案皆正常可執行，若無法執行則視同放棄參選資格。

（一）參與「媒體單元教材」「數位學習教材」甄選之參選者必須上傳資料、包含：

1.【甄選作品】：檔案總容量必須小於 30MB，支援格式參考甄選作品支援規格。

2.【素材資料夾壓縮檔】：不得超過 50MB，壓縮檔限定*.zip（素材檔資料夾.zip）。素材必須加以分類，例如：照片資料夾、fla 檔資料夾（或 swf 檔資料夾）、聲音檔資料夾、影片檔資料夾等，並以 doc檔說明內含之素材檔與檔案數量，連同已經分類的各種素材資料夾置放於素材檔資料夾壓縮（素材檔資料夾.zip）後上傳，檔案總容量小於50MB。

3.【教學簡案】：建議為*.doc、*.ppt、*.pdf 或*.zip 壓縮檔。

4.【操作說明】：建議為*.doc、*.ppt、*.pdf 或*.zip 壓縮檔。

5.上述四項檔案皆為評審重要依據，若有短缺則不列入評審。

八、作品繳交注意事項：

（一）甄選作品一旦上傳至本網站甄選，作者不得以任何理由要求本中心刪除甄選作品或退出甄選。

（二）作品內容以自行開發與編製為主。不得連結其他網站或運用非經授權之圖片、影片、音樂等為內容；且作品之版權不得為授權其他單位使用者。

九、評審方式：

（一）甄選作品由承辦單位聘請學者或專家籌組成評審小組於98年9月1日至10月31日進行第一階段之初審、複審，評選出「第一階段入選作品」，並將「第一階段入選作品」公佈在本甄選活動網站與「臺北市多媒體教學資源中心網站」（http://tmrc.tp.edu.tw/〉，

且計劃在98年11月1日至15日進行第二階段之決審。

（二）評審標準：

1.本次評選為優良之「媒體單元教材」、「數位學習教材」，不以作品之資料量多寡為考量，而是強調如何在教學活動中設計「多媒體教材」，以輔助教師教學或學生學習之用；「教育經典短片」以能夠引發學生學習動機、並具教育意涵與省思之短片，作為輔助教師教學或學生學習為宜；「校園紀錄片」則以具有教育意涵並能引發學生自省之紀錄片為考量。

2.評審要項包含：

正確性：（1）架構合邏輯（2）內容正確（3）多媒體功能正確。

完整性：（1）上傳（或郵寄）資料完整（2）知識內涵完整 （3）活動設計完整。

實用性：（1）符合學習者學習能力（2）符合學習者生活經驗（3）教學時間適當（4）在現行教學環境中具體可行。

活潑性：（1）介面親和 （2）版面美工活潑 （3）具創意（4）引發驚奇（5）能啟發思想、擴展視野。

（三）評審流程：

1.評審流程分二個階段進行，第一階段進行「初審」與「複審」評選出「第一階段入選作品」； 並將「第一階段入選作品」公佈在本甄選活動網站與「臺北市多媒體教學資源中心網站」（http://tmrc.tp.edu.tw/〉，提供教師觀摩。

2.第二階段進行「決審」以評定入選作品之等級為：「佳作」「優等」、與「特優」。

3.決審評定為「特優」之作品必須參加優良作品發表會發表作品；獲得特優作品之作者若未參予發表會發表作品，主辦單位得將其作品等級改列為「優等」。

4.優良作品發表日期：暫定 98 年 11 月中下旬。

十、甄選價購：

（一）甄選用途：主辦單位依甄選評審結果，價購入選作品及其版權(全校授權)，置放於「臺北市多媒體教學資源中心」網站以供各級學校教師進行教學活動時使用。

（二）入選作品等級共分為「特優」「優等」「佳作」、、，其版權價購費如下：

1.「媒體單元教材」與「數位學習教材」：

「特優」三萬元，「優等」二萬元，「佳作」一萬元。

2.「教育經典短片」：

「特優」一萬元，「優等」8,000 元，「佳作」5,000 元。

3.「校園紀錄片」：

「特優」十萬元，「優等」八萬元，「佳作」五萬元。

（三）本年度預計甄選之作品數量如下：

1.「媒體單元教材」與「數位學習教材」：特優 5 名、優等 10 名、佳作35 名。

2.「教育經典短片」：特優 5 名、優等 10 名、佳作 35 名。

3.「校園紀錄片」：特優 1 名、優等 2 名、佳作 3 名。

（四）各入選作品於價購時將依法扣除 10%稅金。

十一、版權說明：

（一）同意遵守臺北市 98 年度中小學（含幼稚園）多媒體單元教材甄選活動之各項規定，保證本甄選作品係未經刊登使用之原創作品，且未獲得其他單位的獎勵，參賽者不得運用前已獲獎或已經授權之同一作品投稿本次甄選活動。

（二）所有甄選作品概不退還（參選者請自行預留底稿），並由主辦單位籌組評選小組評選優良作品。

（三）得獎作品之著作財產權屬臺北市政府教育局與本作品參選作者所共同所有。本作品參選作者同意臺北市政府教育局對於本作品之著作財產權擁有專屬無償使用權，得公開展示、重製、編輯、推廣、公佈、發行和以其他合作方式利用本作品內容，以及行使其他法定著作財產權所包括之權利。

（四）本作品參選作者擔保本作品內容合法和有效存在，未侵害或抄襲他人之著作，且未曾以任何方式出版或發行。若作品經人檢舉或告發涉及著作權、專利權之侵害，除取消其得獎資格並追回原發之採購金、版權價購證明之外，並將刊登公佈於公開之媒體。

十二、本活動聯絡：臺北市教師研習中心

聯絡人：黃惠美編審　聯絡電話：02-28616942-234（or 236，237）

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