出國報告（出國類別：參加國際研討會發表論文）

參加國際研討會發表論文報告書

(研討會名稱：EdMedia 2015 - World Conference on Educational Media and Technology)

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報告日期：104/09/29

目次

摘要

本次出國參加之會議為由國際「資訊教育促進協會」(Association for the Advancement of Computing in Education, AACE)所主辦2015年教育媒介與科技之世界研討會(2015 World Conference On Education Media & Technology)。參與此會議成員遍及全世界（如美國、比利時、澳洲、台灣等國家）各地。本次研討會的主要專題演講之一是「Teaching in Blended Learning Environments: Creating and Sustaining Communities of Inquiry)。而本人所發表的論文為：Enhancing reading comprehension through computer supported collaborative learning (論文內容請詳見附錄一)。本研究探討如何透過知識創新的教學與科技來引導小學生培養比較強調發想與討論的創意閱讀方式。研究結果也發現，小學生在平台工具的引導下能夠提出許多有趣與多元的看法與想法；閱讀理解測驗上也顯示長足的進步。未來會在進一步修改此論文後，將其投稿到國際期刊上。

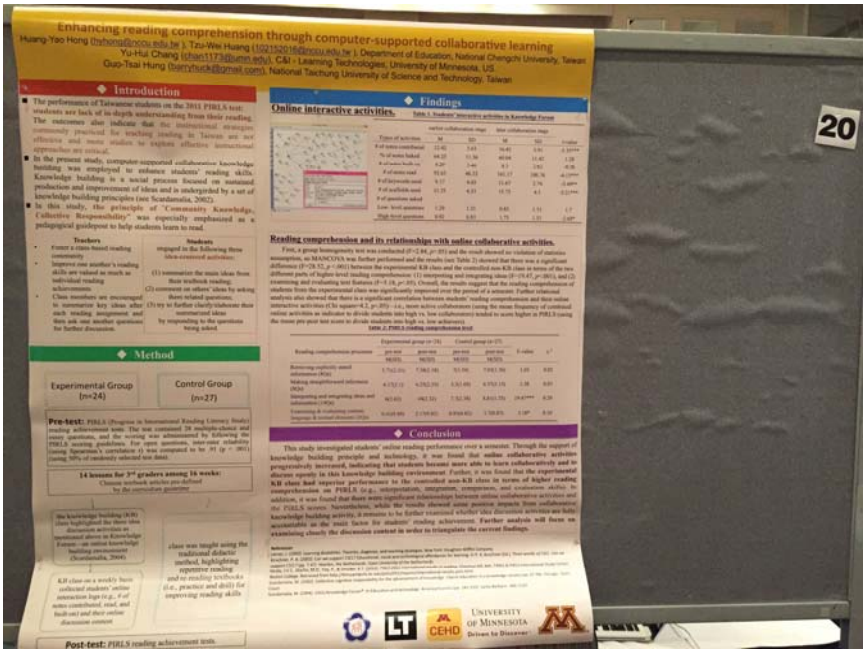
本文

一、 目的

發表學術論文一篇(內容請詳見附錄一)。

二、 過程

本次會議舉辦時間（2015 年 6/22-6/25）共 4 天，議程（個人發表部分）如附錄二。本會議由國際「資訊教育促進協會」(Association for the Advancement of Computing in Education, AACE)所主辦。參與本研討會的人員來自世界各地，國籍十分多元。本研討會的主要議題放在教育與科技的發展與應用。會議每年舉辦一次。議程包含長篇論文發表(paper presentations)，工作坊（workshops），以及海報論文發表（poster presentations）等。此次發表的論文為二篇海報論文，本人為其中一篇的第一作者。題目如下：Enhancing reading comprehension through computer supported collaborative learning（圖一為會海報的照片）。本研究主要探究如何透過以想法為中心所設計的知識創新(knowledge building)教學策略與平台科技來幫助小學生學習如何閱讀、討論與反思自身閱讀後的想法，並提昇其閱讀理解能力。研究對象為二班小學 3 年級學生。資料來源主要是學生們在平台上的討論文字與他們的閱讀理解測驗。研究結果發現實驗組的小學生們在知識創新的教學下變的更有想法、更願意主動提想法，以及與同學討論想法。本篇論文發表日期為 2/25，發表場次為 Poster Session。會議議程請見附錄二。



三、 心得及建議

出席此次國際會議有許多收獲，心得（與建議）方面主要有以下三點。一是瞭解國際上一些重要學術社群的研究趨勢。從這次會議所邀請的專題演講者與其主要講題（Teaching in Blended Learning Environments: Creating and Sustaining Communities of Inquiry）中可知未來混合教室與線上學習方式將有逐漸增加的趨勢，所以建議各級學校應加速協助校內教師提昇其使用數位科技以逐漸進行混合（面授與線上）或網路教學的能力。二是藉由此次發表的機會得以反思本研究論文的內容，並思考如何修改或提昇本研究。本篇論文主要探討如何透過知識創新教學法與科技以提昇小學生的閱讀能力。未來會再進一步思考如何在論文寫作上進一步修改，以使本研究得以發表在具影響力的國際期刊上。三則是透過此發表的機會得以讓國際上的學者認識本校，提昇本校的國際能見度。最後要感謝學校提供此一補助，鼓勵校內同仁出國參加研討會。相信這樣的體驗，有助於開拓視野、了解國際動態、以及提昇研究能力。

附錄一(海報論文全文)

Enhancing reading comprehension through computer-supported collaborative learning(1/2)

◆ Introduction

To advance students' reading skills has been an important instructional goal in Taiwan and in many other countries as well. In general there are two major reading skills: word recognition and reading comprehension. The former refers to basic reading ability, and the latter constitutes higher reading ability (Lerner, 2003). While Taiwan has been highly dedicated to improving its reading education, the 2011 PIRLS test results indicated that Taiwanese students were falling behind many other fellow Asian countries(with a 14 point difference), including Hong Kong, Singapore. In particular, students' lower-level reading comprehension skills (e.g., retrieving explicitly stated information) is superior to their high-level reading comprehension skills (e.g., interpreting and integrating ideas and information) (Mullis, Martin, Foy & Drucker, 2012), indicating that students are lack of in-depth understanding from their reading. The outcomes also indicate that the instructional strategies commonly practiced for teaching reading in Taiwan are not effective and more studies to explore effective instructional approaches are critical.

In the present study, computer-supported collaborative knowledge building was employed to enhance students' reading skills. Knowledge building is a social process focused on sustained production and improvement of ideas and is undergirded by a set of knowledge building principles (see Scardamalia, 2002). In this study, the principle of "Community Knowledge, Collective Responsibility" was especially emphasized as a pedagogical guidepost to help students learn to read. Based on this principle, the homeroom teacher tried to foster a class-based reading community where contributions to shared class goals to improve one another's reading skills are valued as much as individual reading achievements and that class members are encouraged to summarize key ideas after each reading assignment and then ask one another questions for further discussion. Specifically, students in this study were guided to engage in the following three idea-centered activities: (1) summarize the main ideas from their textbook reading; (2) comment on others' ideas by asking them related questions; (3) try to further clarify/elaborate their summarized ideas by responding to the questions being asked.

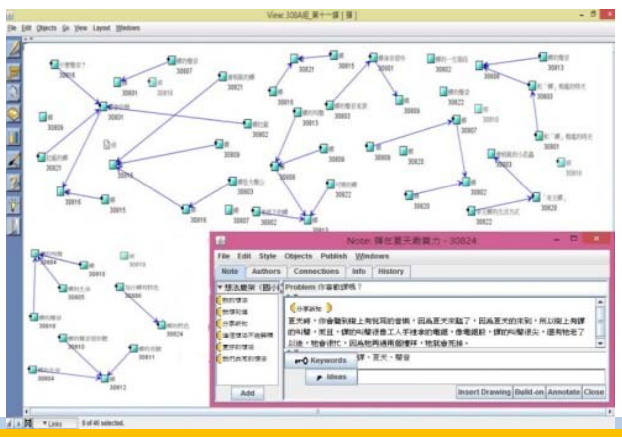
◆ Method

Participants were two classes of third-graders (N=51) from Taipei, Taiwan (n=24 in the experimental group and n=27 in the control group). The topics discussed both in the control class and in the knowledge building (KB) class were Chinese textbook articles pre-defined by the curriculum guideline (14 lessons in total). The control class was taught using the traditional didactic method, highlighting repetitive reading and re-reading textbooks (i.e., practice and drill) for improving reading skills. In contrast, the KB class highlighted the three idea discussion activities as mentioned above in Knowledge Forum—an online knowledge building environment (Scardamalia, 2004). The study lasted for a semester. The researcher assisted in the classes on a weekly basis. Data included (1) students' online interaction logs (e.g., # of notes contributed, read, and built-on) and their online discussion content; (2) PIRLS (Progress in International Reading Literacy Study) reading achievement tests, which was used for pre-posttest purpose. The test contained 28 multiple-choice and essay questions, and the scoring was administered by following the PIRLS scoring guidelines. For open questions, inter-rater reliability (using Spearman's correlation r) was computed to be .91 ($p < .001$) (using 50% of randomly selected test data).

◆ Findings

Online interactive activities.

Figure 1 shows a sample idea discussion space and an idea posted as a note that we excerpted from this study. Table 1 further showed the result of students' online interactions from earlier to later KB phases (separated by mid-term exams). It was found that there were progressively increased online activities, indicating that students were getting used to online collaborative knowledge work over time. In particular, it was found that students were able to progressively contribute and read more ideas/notes, identify more keywords in their posting, and use more scaffolds to support their summarized ideas for the text read from books.



Enhancing reading comprehension through computer-supported collaborative learning(2/2)

◆ Findings

Table 1. Students' interactive activities in Knowledge Forum

	earlier collaboration stage		later collaboration stage		
Types of activities	M	SD	M	SD	t-value
# of notes contributed	12.42	3.63	16.42	3.91	-5.35***
% of notes linked	64.25	11.36	60.04	11.42	1.28
# of notes built-on	8.29	3.46	8.5	2.62	-0.36
# of notes read	92.63	46.22	161.17	106.76	-4.15***
# of keywords used	9.17	4.03	11.67	3.74	-3.49**
# of scaffolds used	11.25	4.33	15.75	4.1	-5.21***
# of questions asked					
Low- level questions	1	0.93	0.83	0.76	0.07
High-level questions	0.54	0.72	0.88	0.8	-1.56

Reading comprehension and its relationships with online collaborative activities.

First, a group homogeneity test was conducted (F=2.84, p>.05) and the result showed no violation of statistics assumption, so MANCOVA was further performed and the results (see Table 2) showed that there was a significant difference (F=28.52, p <.001) between the experimental KB class and the controlled non-KB class in terms of the two different parts of higher-level reading comprehension: (1) interpreting and integrating ideas (F=19.47, p<.001), and (2) examining and evaluating text features (F=5.18, p<.05). Overall, the results suggest that the reading comprehension of students from the experimental class was significantly improved over the period of a semester. Further relational analysis also showed that there is a significant correlation between students' reading comprehension and their online interactive activities (Chi square=4.2, p<.05)—i.e., more active collaborators (using the mean frequency of combined online activities as indicator to divide students into high vs. low collaborators) tended to score higher in PIRLS (using the mean pre-post test score to divide students into high vs. low achievers).

Table 2: PIRLS reading comprehension level

Reading comprehension processes	Experimental group (n=24)		Control group (n=27)		F-value	η^2
	pre-test	post-test	pre-test	post-test		
	M(SD)	M(SD)	M(SD)	M(SD)		
Retrieving explicitly stated information (8Qs)	5.71(2.31)	7.38(2.18)	7(1.54)	7.93(1.36)	1.03	0.02
Making straightforward inferences (8Qs)	4.17(2.1)	6.25(2.35)	5.3(1.68)	6.37(2.15)	1.38	0.03
Interpreting and integrating ideas and information (10Qs)	6(2.62)	10(2.32)	7.7(2.38)	8.81(1.75)	19.47***	0.29
Examining & evaluating content, language & textual elements (2Qs)	0.42(0.88)	2.17(0.82)	0.85(0.82)	1.7(0.87)	5.18*	0.10

◆ Conclusion

This study investigated students' online reading performance over a semester. Through the support of knowledge building principle and technology, it was found that online collaborative activities progressively increased, indicating that students became more able to learn collaboratively and to discuss openly in this knowledge building environment. Further, it was found that the experimental KB class had superior performance to the controlled non-KB class in terms of higher reading comprehension on PIRLS (e.g., interpretation, integration, comparison, and evaluation skills). In addition, it was found that there were significant relationships between online collaborative activities and the PIRLS scores. Nevertheless, while the results showed some positive impacts from collaborative knowledge building activity, it remains to be further examined whether idea discussion activities are fully accountable as the main factor for students' reading achievement. Further analysis will focus on examining closely the discussion content in order to triangulate the current findings.

附錄二(會議議程)

Concurrent Sessions - Tuesday, June 23 5:15-7:00 PM

« back to Tuesday events

Room #10

No presider for this session.

Troubled Lands: A Sustainability Game That Provokes Moral Discourse
5:15-7:00 PM

1. Tom Fennewald, Concordia University, Canada

Kinect-based voice recognition prompting system for people with cognitive impairments
5:15-7:00 PM

1. Yan-Siang Luo, Chung Yuan Christian University, Taiwan

iReflect: Mobile Reflection for Learning
5:15-7:00 PM

1. Jorge Reyna, Artminds Digital Media, Australia

Using Mobile Applications for Paperless Assignments in Mathematics: A Pilot Study
5:15-7:00 PM

1. Jorge Reyna, Artminds Digital Media, Australia

Online Assessment Recording System Supports Data-Based Decisions on Student Numeracy
5:15-7:00 PM

1. David Pugalee, Center for STEM Education, UNC Charlotte, United States
2. Michelle Stephan, UNC Charlotte, United States
3. Christine Robinson, UNC Charlotte, United States

Teaching & Learning at HCC: An Online Professional Learning Community for Adjunct and New Full-time Faculty
5:15-7:00 PM

1. Marcie Revale, Hillsborough Community College, United States
2. Jody Weaver, Hillsborough Community College, United States

Aim High, Aim Low: Improving Learning in Large Biology Classes with High Tech Lectures and Low Tech Labs
5:15-7:00 PM

1. Mary Tyler, University of Maine, United States
2. Ryan Cowan, University of Maine, United States
3. Farahad Dastoor, University of Maine, United States
4. Kevin Tracewski, University of Maine, United States

AdventureCode: Computational Thinking Through Games
5:15-7:00 PM

1. Jaelle Scheuerman, Iowa State University, United States

The Effect of Usability of Learning Management System on Student's Flow Experience and Learning Experience
5:15-7:00 PM

1. Shin-Yu Chang, Tamkang University, Taiwan
2. Chun-Yi Shen, Tamkang University, Taiwan

Support for teachers when they need it
5:15-7:00 PM

1. Marjon Baas, Saxion University of Applied Sciences, Netherlands

TOWARDS A TAILOR-MADE BLENDED LEARNING TRAINING FOR TEACHERS Developing teachers' blended learning profile
5:15-7:00 PM

1. Lore Demedts, Artevelde University College Ghent (Belgium), Belgium
2. Frederic Raes, Artevelde University College Ghent (Belgium), Belgium

Integration of Situated Learning and Context Awareness Technology into Elementary School English Learning
5:15-7:00 PM

1. David Tawei Ku, Tamkang University, Taiwan
2. Wan-Yu Chen, Tamkang University, Taiwan

Fostering more self-reflective understanding of teaching knowledge in a knowledge building environment
5:15-7:00 PM

1. Yu-Hui Chang, University of Minnesota, United States
2. Huang-Yao Hong, National Chengchi University, Taiwan, Taiwan
3. Li-Yueh Hua, National Chengchi University, Taiwan, Taiwan
4. Guo-Tsai Hung, National Taichung University of Science and Technology, Taiwan

How to Get Effective Feedback?-- Case Study in the Video Editing Class with YouTube and Facebook
5:15-7:00 PM

1. Daisuke Kaneko, School of Economics, Hokusei Gakuen University, Japan

Enhancing reading comprehension through computer-supported collaborative learning
5:15-7:00 PM

1. Huang-Yao Hong, National Chengchi University, Taiwan
2. Tzu-Wei Huang, National Chengchi University, Taiwan, Taiwan
3. Yu-Hui Chang, University of Minnesota, United States
4. Guo-Tsai Hung, National Taichung University of Science and Technology, Taiwan

Creating Middle School Child-Based Personas for a Digital Math Practice Application
5:15-7:00 PM

1. Shirley Varela, Amplify, United States
2. Candida Hall, Amplify , United States
3. Hee Jin Bang, Amplify, United States

Tools of Engagement Project (TOEP): Discovering and exploring within a supportive professional development community

5:15-7:00 PM

1. Roberta (Robin) Sullivan, Center for Educational Innovation, University at Buffalo, State University of New York, United States
2. Cherie van Putten, Binghamton University, State University of New York, United States
3. Nathan Whitley-Grassi, Empire State College, State University of New York, United States