

Promoting Academic Literacy in CSCL Environment for Chinese Tertiary Business Students

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Abstract: This study aims to examine a design of computer-supported collaborative learning environment featured by Knowledge Forum with embedded teacher-student co-designed scaffolds and group portfolios as an assessment tool for Chinese tertiary business students and to further investigate how academic literacy develops in the designed environment. Four intact classes with 127 Year 1 students participated in a 12-week project learning in two different learning environment, namely Knowledge Forum and non-Knowledge Forum environment. Data were obtained from exam results, essay writing, portfolio, learning reflection, interviews, and KF discussion notes. Four dimensions of academic literacy were identified and rated. MANOVA analyses showed significant main effects of environment indicating that KF groups have significant higher gains in argumentative development. Both quantitative analyses of KF notes and qualitative data analyses show that use of KF scaffolds is likely to facilitate collaborative conceptual understanding and argumentative construction.

Keywords: academic literacy, CSCL, scaffold, assessment, tertiary education

1. Introduction

Academic literacy in higher education has aroused world-wide intensive research attention, particularly in universities using English as a medium of instruction (Goodfellow, 2005; Jacobs, 2005; Lea, 1998; Leibowitz, 2004). Coupled with the paradigm shift in learning theories, research on academic literacy has extended far beyond cognitive traditions viewing academic literacy simply as reading and writing component skills required for academic studies in higher education. More recently, there has been a considerable body of studies grounded on the premise of constructivism and social constructivism defining academic literacy as higher-order learning/ thinking in the process of academic socialization (Lea, 1998) in pursuit of deep collaborative contextual meaning (Lea & Street, 2006). These studies have been conducted from different perspectives, including socio-cultural approach, to be specific, in humanistic, genre, ideological, and ecological orientations (Cheng, 2008; Lea & Street, 2006; Warschauer, 2004), and constructive and epistemological orientations (Hendricks & Quinn, 2000).

In parallel with the development of research in learning, academic literacy and information technology, computer-supported collaborative learning as a new educational philosophy provides potentials to promote academic literacy (Warschauer, Grant, Real, & Rousseau, 2004). For example, some researchers argue that using computers in writing instruction helps enhance student motivation and engagement (Goldberg, Russell, & Cook, 2003). Students' social literate skills are improved in a dynamic process of continually advancing the communal knowledge and understanding (Scardamalia & Bereiter, 2006). Knowledge Forum is evidenced as a useful CSCL platform to enhance collaboration and

deep meaning inquiry, to scaffold collaborative inquiry-based learning and to appropriate related social-cognitive understanding (Chan & van Aalst.2004; Scardamalia & Bereiter, b2006). However, most research on academic literacy in CSCL has been conducted in secondary education in L1 or ESL countries. Little research so far has been done in tertiary education in EFL countries. Furthermore, many previous studies on CSCL in higher education contexts focused on argumentation in different content domains. This study, however, addresses both literacy and argumentation in an under-researched domain of business education. In addition, we augmented assessment with learning with online collaborative learning to examine its effect on academic literacy.

In sum, this study aims to evaluate a design of CSCL environment using Knowledge Forum with teacher-student designed scaffolds and portfolio assessment on academic literacy in a Chinese business university and investigate how academic literacy and argumentation develop in CSCL environment. Specifically, there are two research questions: 1.What is the effect of collaborative inquiry-based learning on Knowledge Forum on students' academic literacy and argumentation? 2. How does student participation and engagement in the online environment contribute to academic literacy development?

2. Research design

2.1 Participants

The participants in this study are four intact classes of Year I society students studying in a tertiary Sino-British joint program in a Business-oriented University in Shanghai. Assigned to two intact classes randomly, two tutors taught respectively by following conventional classroom-based writing instruction and by designing and implementing a collaborative inquiry-based learning environment. Therefore, KF groups and non-KF groups are used below to differentiate the classes in different learning environment.

2.2 Designing and Implementing a CSCL environment

The research was conducted in a core module of English for International Business with teaching objectives to develop an initial awareness of key business concepts and issues in Total Quality Management (TQM), basic research skills and reading and writing skills required in authentic business context. This 12-week module was originally featured by a student-initiated group project in the area of Total Quality Management. This study was conducted in the first six weeks investigating the development of academic reading and writing skills in an online collaborative inquiry-based environment featured by Knowledge Forum as a cognitive learning tool to scaffold collaborative inquiry-based learning.

2.2.1 KF Scaffold design and assessment approach

One of the salient features in KF environment is the embedded scaffolds facilitating the process of articulating ideas, meaning negotiation and collaborative inquiry. These scaffolds are not solely designed by teachers based on their conceptualization and experiences of collaborative meaning-seeking. Instead, students were invited to participate in the design process through proposing, questioning and commenting the scaffolds. The embedded scaffolds on KF, which might be subjected to constant updating, are therefore indicative of the process of meaning negotiation between teachers and students.

Assessment has been another key design element for CSCL environment. Many

studies propose a mediation role of assessment in designed CSCL environment (Chan & van Aalst, 2004). Portfolio has been proposed as a useful assessment tool for capturing both the individual and collective aspects of learning and for enhancing agency and collective cognitive responsibilities to when assessing their own individual work and group work. Portfolio tasks in this study were designed to identify the evidence of collaboration in the process of group reading and writing activities and to reflect upon the online collaborative learning experiences in terms of both cognitive and linguistic gains.

2.2.2 Instructional Design

This study was aimed to examine the role of a designed collaborative computer-supported learning environment on academic reading and writing. The six-week design for CSCL learning environment consisted of three stages: namely, collaborative learning culture building, scaffolded collaborative inquiry and externalized collaborative inquiry in writing.

Major design differences for Knowledge Forum groups from non-Knowledge Forum groups at the first stage are the build-up of collaborative inquiry culture in classroom through using jigsaw reading activities and of after-class online collaborative learning environment. Students continued in-class discussions on KF using teacher-student co-designed scaffolds. At the second stage, KF jigsaw reading and writing activities were designed to facilitate online collaborative inquiry for deeper understanding of TQM. Students were encouraged to put on summary notes and questions as had instructed after reading materials on one aspect of TQM and to comment and question others' notes. Key issues in TQM were posted, defined and discussed in project groups through using constantly updating scaffolds. At the last stage, they were given an argumentative essay title of "Discuss the argument that Chinese business should adopt TQM, if they are to succeed internationally". Unlike non-KF groups following traditional training of individual writing, KF groups were suggested to upload the essay plans and drafts onto the KF for discussion. Their collaborative writing process were documented and assessed in group portfolio.

2.3 Data Sources

To evaluate the design of a CSCL environment on academic literacy, students' previous test scores on reading and writing in semester 1 were collected to examine if pre-test group differences existed. Students' short essays were assessed to measure academic literacy based on a top-down and bottom-up manner. The rating actually went through two stages of holistic rating based on a general model of academic literacy from literature and second rating with modified criteria with new categories generated from the data. Students' KF online notes and portfolio tasks were also collected and analyzed to capture the process of academic writing in the designed environment.

3. Preliminary results

RQ 1. What is the effect of collaborative inquiry-based learning on Knowledge Forum on students' academic literacy and argumentation?

Students' short essays were rated twice blindly by two raters. They went through an iterative process until the four dimensions generated, namely, conceptual understanding, argumentative development, organization and mechanics of writing and use of language. Each dimension were scored on a one to four points. The inter-rater reliability check was .82 based on Pearson Correlation.

Pre-test of differences between KF groups and non-KF groups showed no

significant difference in English reading and writing. To examine the effects of KF learning environment and teacher on academic literacy, a two-way ANOVA was performed using teacher and environment as independent variables and conceptual understanding, argumentation development, organization and use of language as dependent variables respectively. The overall MANOVA results indicated a significant main effect of environment on academic literacy [Wilker's lambda = .77, $F(4,105) = 7.75$, $p = .00$, $\eta^2 = .23$], but neither the main effect of teacher [Wilker's lambda = .96, $F(4,105) = 1.24$, $p = .30$, $\eta^2 = .05$] nor the interaction effect between teacher and environment [Wilker's lambda = .95, $F(4,105) = 1.27$, $p = .29$, $\eta^2 = .05$] was significant. The follow-up univariate analyses showed a significant main effect of environment on argumentation development ($F(1, 112) = 6.54$, $p < .05$) but no significant main effects of environment were observed on the other three dimensions. More specifically, students in the Knowledge Forum groups ($M=7.54$, $SD=2.34$) scored significantly higher than their peers in non-Knowledge Forum groups ($M=6.32$, $SD=2.48$) on argumentation development, indicating that KF groups were likely to use more sophisticated strategies to develop argumentation.

RQ2. How does KF engagement contribute to academic writing?

To further investigate KF engagement, Analytic Toolkit (ATK) for Knowledge Forum was used (Burtis, 1998; Lee et al. 2006). From the ATK overview, four indices were recognised to characterize students' participation on KF discussion, namely, note-reading, note-created, note-revised, and scaffold use. The means were 27.91(28.91), 3.84(3.01), 1.00(1.61) and 3.50 (3.71) for note-reading, note creating, note-revised and scaffold-use respectively.

Correlation analyses were conducted to examine the relation between KF engagement and academic writing. The results indicated that among the different knowledge building indices, scaffold use is significantly correlated with conceptual understanding of the topic ($r = .33$, $p < .05$) and argumentative development of academic writing ($r = .36$, $p < .05$). There were no significant correlations between other indices with the dimensions of academic writing.

Preliminary results from qualitative data also lent support to the finding of the important role of scaffold use in the designed environment in fostering conceptual understanding and organizing thinking in essay writing. Students were observed to have used co-designed scaffolds, such as "my definition" "my elaboration" "I couldn't understand" "my argument" For example, one student once wrote about her opinion on embedded scaffold use in her reflection.

Before we talk, we need to label what we are going to say. Is that my definition, am I contributing some information, or what do I want to know more about? We would like to free talk on whatever topics. However, when preparing for essay writing, most of our KF notes are found quite useful and relevant. I reviewed our discussion for different perspectives and useful information labelled by "new information", "my definition", "my argument", "I couldn't understand". These labels organized our thinking in discussion (informant #3).

3. Discussion and limitation

This study is to evaluate a designed CSCL learning environment on academic writing and examine how academic literacy develops in it. It carries on the inquiry line in designing favorable learning environment with scaffolds and assessments aligned with learning, collaboration and assessment for academic literacy development in higher education.

Both qualitative and quantitative analyses in this study seemed to provide evidence that online collaborative learning environment featured by teacher-student co-designed

scaffolds could be a potential tool to develop argumentative development in academic writing. Scaffolds are commonly used in CSCL environment but this study incorporates online and offline work as well as integrating thinking and literacy development. It is consistent with current research on argumentation construction in CSCL literature but also extends the mediating role of the online learning environment in EFL environment and in business education as well.

Indeed, the further analyses of KF engagement on academic literacy development points out that among the four indexes of KF engagement, note-creating, and note-revised are not correlated with the four dimensions of academic writing, but correlation seems to be found between scaffold use and conceptual understanding of the topic-related concepts and argumentative development. The preliminary findings supported the input-hypothesis in second language acquisition that emphasized the important role of language input. More importantly, it indicated the significant role of the use of scaffolds co-designed by teachers and students on academic literacy development in a technology-enhanced environment. Qualitative data analyses also suggest that students' participation in the process of designing and using scaffolds is likely to initiate deeper inquiry.

However, caution needs to be taken when interpreting the tentative conclusions from the six-week program. It remains quite unknown if the language use, conceptual understanding and organization of writing might change if longer time permits in implementation of the designed environment or if the changes in these dimensions would be subjected to a long transfer effect. To facilitate further understanding of how academic literacy develops in the designed online learning environment, more qualitative data analyses are being analyzed based on KF discussion notes, interview data, learning reflections and teachers' observation field notes and reflection.

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