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Investigating the Language Learning Potential of Data-driven Teaching Materials on Source Use for College Students in a Writing Course

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Abstract

This report documents the results of the investigation into the language learning potential of data-driven teaching materials on source use for undergraduates in a college-level writing course at a large land-grant Midwestern university. The investigation is a part of a large project which comprises three major stages: linguistic analyses on source use of 149 documented essays written by college students, development of data-driven materials on source use, and evaluation of the materials. The data-driven teaching materials consist of a corpus-based web tool and a computer-delivered online lesson on source use. The corpus-based web tool provides examples of citing sentences in the collection of 79 A-graded essays as concordance lines which help illustrate different features of source use, and displays graphs showing frequency distributions of citing sentences across sub-categories of each feature of source use. The computer-delivered online lesson contains two major tasks each of which has questions that guide students to observe the use of a feature of source use in the corpus-based web tool. This report summarizes key findings of the implementation of the materials in a naturalistic instructional setting. These findings focus on the language learning potential of the materials which concerns two major aspects: (1) whether the pedagogical design characteristics of the materials led to the students' hypothesized learning processes (i.e., noticing and focusing on features of source use), and (2) whether the students gained any knowledge, skills, and awareness about source use after the training.

Background

College-level writing courses are quite common in most colleges and universities in the United States and all over the world. Due to the popularity of these courses, extensive research has been conducted to understand writing processes in order to improve writing instruction in these courses. As a result, writing instruction in the college-level writing courses has undergone significant changes over the last centuries. However, scholars have recently criticized the lack of descriptions about both student writing and academic genres for college students in composition courses and indicated the potential benefits of enhancing language-level attention in college-level writing instruction (e.g. Aull, 2015, Lancaster, 2014). Academic writing researchers have also shown that incorporating external sources in one's own writing is an important and challenging skill for college students (e.g., Hyland, 1999, 2002; Thompson, 2005a, 2005b). In order to address the aforementioned gaps in current pedagogy in college-level writing courses, this project aims at seeking pedagogical design principles for teaching materials on source use for college students. The pedagogical design principles for developing the materials on source use in this study were theoretically and empirically informed Systemic Functional Linguistics (SFL), Corpus Linguistics (CL), and Second Language Acquisition (SLA). Brief explanations about the major theoretical grounds of the design principles for the development of the materials on source use are provided below:

Genre-based Analysis Approach. In terms of writing pedagogy, SFL advocates that learners of academic discourse should be explicitly taught about generic features when learning how to write text types. Thus, researchers have indicated many other potential benefits of incorporating genre-based analysis, which involves an examination of a corpus of texts in a specific socio-cultural and communicative context, into writing instruction in college-level writing.

Data-driven Language Learning. Data-driven language learning (DDL), which is also known as the direct application of CL as it involves direct interaction with a corpus by teachers and students, has also been

indicated as a promising approach for improving writing instruction (e.g., Boulton, 2012; Johns, 1991). According to Johns (1991), DDL is characterized by its provision of "direct access to the data" or "the facts of linguistic performance" for language learners and active involvement of learners in understanding the use of a target discourse feature by interacting with a corpus through concordance lines (Johns, 1991, p.3).

Noticing Hypothesis. The Noticing Hypothesis (NH) has been considered as a critical theoretical view in SLA. It explains that learners' acquisition of linguistic input is more likely to increase if their attention is consciously drawn to linguistic features. The NH postulates the roles of noticing in second language acquisition, and the importance of attention in noticing and awareness in the acquisition process (Schmidt (1990, 2001).

Methods

The evaluation focuses on the appropriateness of the materials on source use in the study context. A total of eight classes under the instruction of four instructors were recruited to participate in the evaluation of the materials. Both quantitative and qualitative analyses were conducted on a number of sources of data. The quantitative data included 41 students' letter grades on source use quality of first and revised drafts, 68 students' test scores on the pre- and post-tests on source use, 139 close-ended responses to the student pre-training survey, 71 responses to the student post-training survey, and 100 computer-based logs of using the materials. In addition, 24 close-ended responses to the pre-training instructor questionnaire about their teaching practice for source use were also collected. The qualitative data consisted of four students' interviews, four students' stimulated recalls, two instructors' interviews, and student responses to the open-ended questions in the lesson and the journal as homework.

Results and Discussion

The *language learning potential* quality of the materials concerns how the characteristics of the teaching materials led to the students' noticing and focusing on features of source use, and whether the students attained any learning gains after working with the materials. The examination of the first aspect of the quality found that to some extent the design characteristics of the materials helped the students attend to and focus on the features of source use. The combination of the quantitative and qualitative findings on learning processes showed that to some extent the intended characteristics of the materials helped draw the students' attention to and facilitate noticing of the source use features. The quantitative analyses of the students' responses to the post-training survey displayed a great consensus among the students with the *six-point Likert-scale* statements about their ability to focus on and notice features of source use when working with the materials, and the role of the eight intended design characteristics in facilitating the students' focusing on and noticing of features of source use. Supporting this quantitative finding, the relational process analyses of the four student interviews identified the same characteristics of the materials with in-depth explanations of the users. These design characteristics can be grouped into the interface design, the provision of examples and graphs in the tool, and the guided induction approach with closed questions in the Moodle-based lesson. Moreover, the findings of the second aspect of the *language learning potential* quality of the materials showed that the learners gained some knowledge and metalinguistic and pragmatic awareness about source use, and generated specific strategies for revising their source use in the first drafts after the training although the statistical tests of these gains were not significant. For example, in terms of knowledge about form and function in source use, 90.15% of the 71 participants agreed with a moderate level of agreement that they learned new features of source use that they had not known before. Similarly, the majority of them thought that they were able to learn about different functions of citations (81.69%) or how to use them for different purposes in documented essays (80.28%).

Conclusion and Future Directions

Overall, the quantitative survey results and the qualitative findings indicated a potential of the materials to draw student attention to and promote noticing of source use features, which led to learning gains in knowledge about form and function of source use, metalinguistic and pragmatic awareness about source use, and revision strategies for their own papers. Not only do the findings of this study on the *language learning potential* of the materials on source use carry implications for forming the pedagogical principles for designing the online materials on source use in this study, but they may also bring to light valuable information for designers of other CALL materials for college students in writing courses. They are also intended to provide insight for both researchers and instructors into effective pedagogical applications of CALL teaching materials in academic writing instruction. Future studies should also examine other evaluation criteria of the materials such as *learner fit*, and *impact* in order to gain insight of the effectiveness of the pedagogical design principles of the materials. The combination of the results of these investigations will help show how the teaching materials might have a potential for combined strengths of these qualities for the targeted group of learners in the selected instructional context.

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