科学研究費助成事業　　研究成果報告書

平成　２６　年　　８　月　２１　日現在

機関番号：　１４３０１
研究種目：　若手研究(B)
研究期間：　2012～2013
課題番号：　２４７２０２５５

研究課題名（和文）英語学術論文作成を目的としたピア・レビューの活用法―科学論文に焦点を当ててー

研究課題名（英文）The usage of peer review for academic writing development: with a focus on scientific writing

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交付決定額（研究期間全体）：（直接経費）　　1,600,000円、（間接経費）　　480,000円

研究成果の概要（和文）：本研究では、英語科学論文執筆のためのピア・レビューの活用法について検証した。理系学部1年生100名を、統制群と実験群1、実験群2に振り分け、実験群に一学期間、互いの作文についてコメント・訂正をさせた。使用言語として、実験群1は英語のみ、実験群2は英語および日本語を自由に選択させた。その結果、被験者全員のライティング能力が向上したが、実験群においてより顕著であり、特に作文の複雑さと流暢さが有意に向上した。実験群1と2には差はみられなかったが、日本語を使用した方が論文執筆に対する抵抗感が弱まり、受講者間の相互作用が活発化することが明らかとなった。

研究成果の概要（英文）：This research investigated the effectiveness of peer review in developing Japanese university students' English academic writing skill. A total of 100 freshmen science students participated in this study and were divided into one control and two experimental groups. Participants in the experimental groups received peer review training at the beginning of the research period and peer reviewed each other's homework in class for one semester. Group 1 used only English whereas Group 2 was given the freedom of using English and Japanese. It was found that both experimental groups have improved their writing proficiency, especially the complexity and fluency aspects of writing. No significant difference was found between English and Japanese usage for peer review. However, it was found that participants who used Japanese during peer review showed less anxiety towards writing. it was also found that using native language in peer review increased student interaction.

研究分野：　人文学

科研費の分科・細目：　言語学・外国語教育

キーワード：　英語学術論文　ピア・レビュー　科学論文

１．研究開始当初の背景

Japanese universities are increasingly introducing more academic writing courses into the curriculum due to the increasing demand for English writing as an international academic communication tool (Hyland, 2002; Reid, 2001). Academic writing is especially important for Japanese science students as many of them continue into postgraduate levels studies. The ability to write academically and to publish in international journals determines the success of their academic career (Pecorari, 2006). However, how to effectively develop students' academic writing ability remains an ongoing challenge. In a previous study by the researcher on developing teaching materials and pedagogies for English scientific writing (Kaken no 21820010), peer review was found to be an effective classroom activity. It was found that most students perceive peer review to be an useful tool and have enjoyed peer review related activities.

Peer review can be an important component of the writing process, which benefits both the reviewer and reviewee (Lundstrom & Baker, 2009). Writers do not improve simply from reading and writing, but from having their work read by another audience. Unlike teacher feedback, which tends to focus at the grammatical level, peer feedback focuses more on the content and organization of the text (Paulus, 1999). It has positive effects on the quality of writing as well as on critical thinking, learner autonomy and social interaction among students (Kitagawa, 1999; Yang, Badger & Yu, 2006).

２．研究の目的

This research aimed at investigating the effectiveness of peer review in developing science students' English academic writing proficiency. Peer review has the potential of improving the quality of writing as well as critical thinking, learner autonomy and social interaction among students. However, it is a controversial practice in the EFL classroom because limited number of research has been conducted in this area and has concluded with divergent results. It was found that while peer review changed writers' writing output (Kondo, 2004), it placed no positive effects on the development of actual composition ability (Hirose, 2009). In addition, it was found that writers' attitude changed both positively and negatively from peer review experience.

Peer feedback can be roughly divided into three types: corrections, commentaries, or a combination of the two (Fazio, 2001). Min further identified four steps in the peer review process: clarifying the writer's intention, identifying problems, explaining problems and making specific suggestions. Hyland & Hyland (2001), on the other hand, suggested that review comments can be categorized into three functions: praise, criticism and suggestion. Praise has an important role in developing motivation and confidence in students (Quinn, 2005). It constitutes positive comments which encourage the reoccurrence of appropriate writing characteristics, attributes or skills (Holmes, 1988). Criticism happens when learners express dissatisfaction with features of the text. It might place detrimental effects on writers, since negative comments are unfavorable and might not be accepted by writers. Therefore, the effectiveness of criticisms on writing varies depending on students' willingness to accept review comments. Suggestion is often referred to as constructive criticism because it has a positive orientation for text improvement (Hyland & Hyland, 2001).

In previous research by the author (Lee, 2010), peer review was examined by analyzing comments of 15 first-year science students in an academic writing class where they reviewed each other in the course of completing a research paper. The analysis employed the classification system by Hyland and Hyland (2001) where comments were categorized into the triad of praise, criticism and suggestion. It disregarded the differences between Japanese (L1) and English (L2) usage among Japanese EFL students. In the previous research, it was found that Japanese science students produced the largest number of suggestion comments, followed by criticism comments and then praise comments (Lee, 2010). An interesting finding derived from that study was that many students used a mixture of Japanese and English comments in their peer review. There appeared to be some tendencies with students' language choice and the type and depth of comments produced. Therefore, it is hypothesized that the student feedback comments may be related to their language choice.

While it is ideal to produce comments in English as it provides practice of the target language for both reviewers and reviewees, the absence of immediate need to use English for communication in the EFL environment demotivates students and may consequently discourage the usage of target language among students (Jacobs, 1987; Nelson & Murphy, 1993). Aside from reported advantages of L2 peer review (Jacobs, Curtis, Braine & Huang; 1998; Kitagawa, 1999; Lundstrom & Baker, 2009;

Yang, Badger & Yu, 2006), it has been shown to be disadvantageous because reviewers lack experience and language proficiency to produce concrete and productive comments (Min, 2005). As the result, reviewees may perceive other learners of the target language to be unqualified and therefore distrust peer comments (Nelson & Murphy, 1993; Paulus, 1999). Similar to less-skillful writers, L2 reviewers would tend to focus on surface linguistic features and neglect higher level thinking (Cumming & So, 1996; Stevenson, Schoonen & De Glopper, 2006; Whalen & Ménard, 1995). Students also spend more time pausing while producing written comments in L2 and consequently write shorter comments (Woodall, 2002). Studies against peer feedback further argue that reviewers often produce 'rubber stamp' comments or remarks which are misleading and thus deter reviewees from revision and rewriting (Bitchener, Young & Cameron, 2005; Goldstein, 2003; Guenette, 2007; Truscott, 1996).

On the other hand, L1 usage is a common mode of communication among L2 writers who perform peer review, as it helps writers to generate more ideas, develop concepts, organize information and accelerate the speed of task completion (Cumming, 1989; Kobayashi & Rinnert, 1992; Schoonen et al, 2003; Wang & Wen, 2002). The vocabulary and grammatical structures in L1 writing are readily available in an automatized way similar to L1 speaking (Schoonen et al, 2003). First-language review is advantageous for both reviewers and reviewees because they can communicate about writing in more depth in their native language (Tarnopolsky, 2000).

This research aims to contribute to the limited literature on English scientific writing development in Japan. Scientific writing is an indispensable skill for future Japanese scientists as it enables students to become more connected to the global science community. The present research aims to validate the effectiveness of peer review on academic writing development by comparing native and target language usage. Finally, it suggests potential teaching implications for scientific writing and other academic writing fields.

３．研究の方法

A total of 100 freshmen science students participated in this study. Participants were recruited from three mandatory academic writing classes taught by the researcher in 2011 and 2012. Participants were divided into one control and two experimental groups. All participants composed one research paper during the research period by extending a piece of previous literature of their choice. Their research paper included the following sections: 1) abstract, 2) introduction, 3) method, 4) results, 5) discussion, and 6) references. Participants in the experimental groups received peer review training at the beginning of the semester and repeatedly peer reviewed each other's homework in class for one semester. Experimental group 1 used only English whereas Experimental group 2 used Japanese Japanese. Both experimental groups received peer review training in week 2 of the research period and practiced how to give and receive (accept, adapt, revise or reject) peer review comments. Participants in the experimental groups peer reviewed each other's writing during class in the following weeks and then revised the peer-reviewed text for homework based on the comments. Participants in the control did not conduct peer review activities on each other. All participants were given the same pre- and post-test and the differences within and between groups were examined. Writing performance was measured by using CAF measurements (complexity, accuracy and fluency). For complexity, MLT (mean length T-unit) and clauses/ T-unit were calculated. For accuracy, the percentage of error free T-unit was calculated by counting the number of global errors. For fluency, the total number of words was used. In addition to CAF measurements, a survey on writing attitudes and anxiety was distributed to the participants after pre and post-test.

４．研究成果

It was found that all participants have improved their academic writing ability by comparing post-test to pre-test. It can be postulated that participants have improved their academic writing ability because they have received one semester of explicit instruction on the writing. Participants in the experimental groups have improved their writing performance, in particular, with the complexity and fluency aspects of their writing. Significant difference was found between control group and experimental groups in the mean length of T-unit. Some differences were found between L1 and L2 usage of peer review. However, those differences were not significant. Despite no significant difference was found in the CAF measurements, it was found that participants who used Japanese produced more interesting content compared to participants who used English as the medium of giving and receiving peer review.

In terms with the affective aspect, it was found that participants who used Japanese during peer review showed less anxiety towards writing. In

addition, it was found that native language usage in peer review increased student interaction and intrinsic motivation. A number of participants have commented in the questionnaire that they enjoyed reading L1 comments by other students and have especially enjoyed reading content-based comments. On the other hand, a number of participants have also commented that they enjoyed giving comments in L1, especially content-related comments. Therefore, it can be concluded that the usage of L1 peer review is effective for developing Japanese science students' academic writing both cognitively and affectively.

５．主な発表論文等
（研究代表者、研究分担者及び連携研究者には下線）

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