Accuracy Error Maps and the Corrective Feedback Process in an Academic Writing Course

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Abstract

This study considers how error maps can enhance teacher feedback on written assignments. A three-year study was undertaken to test whether academic writing accuracy error maps help students develop the ability to self-correct accuracy errors, improve teacher feedback, and foster greater student uptake. The results suggest error maps can improve the ability of students to self-correct, refine teacher feedback, and enhance student understanding of teacher corrections and comments when used in conjunction with common process writing approaches in an academic writing course. In doing so, the study may provide an important focus for additional research into developing the ability of students to improve their accurate use of English when working on written coursework. It concludes with suggestions on how to integrate error maps into an existing academic writing course.

Introduction

Autonomy is a difficult term to define because it can become confused with what is perceived to be self-instruction. The literature on autonomous learning struggles with such a definition as well. Researchers on the topic question whether autonomy is a capability or whether it is a performance. Some consider whether learners take responsibility for their own language acquisition or whether they take control of their own language acquisition (Benson 2001). However, there is wide-ranging agreement that learners who are autonomous clearly are familiar with the purpose of their course work. They also take greater responsibility in their own learning. Finally, they participate in evaluating their own learning and how useful such learning is (Holec 1981, Little 1991).

Corrective feedback is mostly associated with the work of Lyster & Ranta (1997) in which they define corrective feedback as a meaning system that emphasizes

teacher and student negotiation of form, either oral or written. Corrective feedback can be categorized into the following three categories: explicit correction, recasts, and the negotiation of form. Previous categories included elicitation, metalinguistic cues, clarification requests, and repetitions (Lyster, 1998b). Elicitation, metalinguistic cues, clarification requests, and repetitions have been consolidated for both recasts and explicit correction provide correct forms to the learner. Recasts do so implicitly, while explicit correction does so explicitly. The negotiation of form does not provide the correct form to the learner. It does, however, help facilitate the learner or peer repair. Lyster (1998b) found that teachers would rather use the negotiation of form to correct lexical errors, and recasts to correct phonological and grammatical errors. To summarize, corrective feedback is described as the provision of negative evidence or positive evidence for erroneous utterances (oral and written), which encourages learners' repair involving accuracy and precision, and not merely comprehensibility. According to Lyster & Ranta (1997) explicit corrections are defined as when the teacher notifies a student of an erroneous form pointing out where and how the language learner spoke incorrectly. Recasts are defined as a teacher's rephrasing of a student's utterance so that the error is spoken back to the student in real time in its correct grammatical form and or meaning. Negotiation of form is defined as corrective feedback that encourages the learner to self-repair. It involves accuracy and precision and it does not only focus on comprehensibility (Lyster & Ranta 1997).

Lyster & Ranta's, (1997) definition of uptake refers to learners' observable immediate response to the corrective feedback in utterances. In sum, learner uptake is defined as a student's utterance that immediately follows the teacher's feedback, and that constitutes a reaction in some way to the teacher's intention to draw attention to some aspect of the student's initial utterance (Lyster & Ranta, 1997).

More pertinent to this study is whether corrective feedback is useful to identify accuracy errors in writing. Some researchers have found it to be effective. Fatham & Whalley (1990) examined feedback on form versus feedback on content and found both were equally effective in helping students develop autonomy over

their writing, enhance teacher feedback, and strengthen student uptake. Ahswell (2000) found strong support for the use of corrective feedback to develop student awareness of accuracy errors.

The author of the current study coined the term ‘error maps’. A portion of the error map appears below in Error Map Example (see appendix 1 for an error map used in the study). Error maps are charts that list grammar error forms in the left margin and writing assignments across the top margin. In the remaining portion of the page is space for the student or teacher to mark academic accuracy writing errors for an individual pupil. The most compelling benefit of using the chart is, as the name suggests, learners map their own individual accuracy errors, which enables learners to develop autonomous control over their own learning and writing. It is a convenient tool to support teachers’ comments and markings on student papers. Students slowly reveal a compelling map of their academic writing accuracy strengths and weaknesses over time, as during a semester or full academic school year.

Error Map Example

Error Type	DT1a	WA1	WA2	DT1b	DT2a	WA3	WA4	DT2b
Commas								
Subject-verb agreement								
Fragments								

In the present study, the focus is on a typical EFL/additional language academic writing course context. The present study aims to compare the results with those of Ashwell (2000) and Fatham & Whalley (1990), studies that illustrated corrective feedback developed the ability of students to self-correct autonomously, enhance teacher feedback, and improve student uptake. The research questions posed in the study are as follows:

(1) Is corrective feedback provided on error maps an effective means to assist student awareness of writing errors?
(2) Is corrective feedback from error maps useful in developing autonomy in

academic writing courses?
(3) Do error maps act as a useful method in the corrective feedback process to develop autonomy, enhance teacher feedback, and improve student uptake of academic accuracy writing errors?

Participants

The data were collected from an advanced level class (TOEFL scores range between 450 to over 550) of EFL students. The participants for this study were all 2nd year students who were enrolled in a special program of study in which the students studied English in order to participate in study abroad programs, with an end goal of earning two degrees, one degree from the participants home country university and another degree from an institution outside of the participants home country. The participants for this study were three advanced level classes over a period of three years, Group A (2010), Group B (2011), and Group C (2012). Group A had an enrollment of 24 students. Group B had an enrollment of 20 students, and Group C had an enrollment of 20 students. The students' data were gathered from the teacher (the researcher of the study) and the students' own written coursework. The participants' ages ranged from 19 to 23. They were all Japanese nationals. Most of the students came from the Kansai area in Japan; a few came from as far away as Okinawa and Akita, Japan. All of them were enrolled in the course because they wanted to earn dual degrees and wanted an opportunity to study abroad. Most of them had learned English in their home country for 7 to 10 years from junior high school to the time they enrolled in the course for this study. The participants in this study clearly had a strong need to develop native-like academic writing skills to complete their educational goals at English-only colleges and universities.

Description of Method

Three different post hoc treatments comprise the method used in the study as described by Brown & Forsythe's post hoc procedure. This is a modification of the

Scheffe test (Hinkle, Wiersma, & Jurs, 2003). According to the authors mentioned above, such an analysis is useful for situations with heterogeneity of variance, as in this case where three classes from three different school years comprise the informants used in the study.

One treatment was given to each group throughout the academic school year. First (see Error Map Teaching Procedures for the process used in the study), Group A had accuracy errors underlined. Group B had accuracy errors underlined and notated with a number system that corresponded to the notations in the writing handbook used in the course. Group C had accuracy errors underlined as well as notated with the same number system as Group B. In addition, Group B was asked to refer to the writing handbook used in the course to explicitly identify coded numbers (same as those used with Group B) on corrected papers in order to clarify any confusion about which type of accuracy error the students might have made on their papers.

Second, Group A completed error maps at the end of each term over the course of the academic school year for a total of two times in one academic school year. Group B completed error maps at the end of each term over the course of the academic school year. Group C completed error maps at the end of each written assignment on the day the marked and graded assignments were returned to the participants.

Finally, each group was given a writing portfolio assignment due at the end of each term. As part of the assignment, participants were directed to describe their accuracy errors[1] based on teacher feedback and error maps in a preface. It was this data that was used as the basis of comparisons between students in different classes to reveal how well the participants learned to understand their individual accuracy errors.

1 From here on, "error" refers to errors in grammatical accuracy.

For all groups, a modified process approach to writing was used (refer to Error Map Teaching Procedure). In addition, the researcher logged accuracy errors on error maps throughout the school year for each student enrolled in the course. Participants in the study logged accuracy errors on error maps. In addition, students wrote which accuracy errors were made throughout the school year in writing portfolio assignments. These comments appeared in the preface of the writing portfolio assignment.

The researcher then compared this data to error maps kept by the researcher. Finally, the researcher used the distribution of responses from the participants that matched those of the researcher to measure whether or not the students learned which accuracy errors they had made throughout the school year.

The accuracy error types used in the present study were limited to errors that were easily identifiable as one error type, such as subject-verb agreement, verb tense, commonly confused words, punctuation, spelling, word use, run ons, apostrophes, and fragments, avoiding errors which are commonly regarded as difficult to categorize, like misplaced and dangling modifiers, commas, coordination and subordination, and parallelism due to the fact these errors cannot be as clearly defined as only a comma error or as only a coordination error. Grammatical terminology used in the study follows those used in the writing handbook assigned to the course (Hacker & Sommers, 2012).

Results

The results will analyze participant responses to error maps and writing portfolio assignments, compared with the researcher's error maps and comparative analysis of writing portfolio responses to the researcher's error maps. In the first portion of the Results section, the author will describe accuracy rates for each treatment group.

Student Error Uptake shows the accuracy of responses for all groups compared to error maps kept by the researcher, which serve as the base level of 100 percent accuracy in the Error Map and Writing Portfolio categories. Average total percent scores were calculated adding error map and writing portfolio percentages. These were then divided by two hundred because error map and writing portfolio percentages were calculated each at 100 percent.

Student Error Uptake

Group:	Error Map:	Writing Portfolio Preface:	Average Total %:
A	26%	12%	19%
B	52%	39%	46%
C	87%	78%	83%

Group A's average accuracy rate compared to the researchers was only 19 percent. The treatment employed with this group suggests Group A's students sense of their writing errors were minimally impacted. The students use of teacher corrective feedback is quite low due to the treatment method employed by the researcher. The treatment required students to become self-aware of their academic writing accuracy errors. Group A had even lower accuracy levels in their writing portfolio reflections at just 12 percent. Students did not appear to gain a sense of how to self-correct their academic writing accuracy errors, and the treatment failed to have any significant impact on their uptake over their academic writing accuracy errors as evident in error map accuracy rate of 26 percent.

Group B's average rate compared to the researchers is stronger than A's at 46 percent. Group B appears to have gained a minimal sense of autonomy over their academic writing accuracy errors with error map accuracy rate of 52 percent. Corrective feedback made a minimal impact on their sense of understanding academic writing accuracy errors based on the average total percent score of 46 percent. Uptake was minimal as well for this group looking at their accuracy percentage rates for their writing portfolio reflections at 39 percent. The treatment for this group appears to have been minimally effective at best.

Lastly, Group C appears to have benefited more than Groups A and B. Group C's average accuracy rate compared to the researcher's is significantly higher than both prior treatment groups at 83 percent. The students appear to have gained a strong sense to self-correct autonomously over their academic writing accuracy errors based on this outcome. Corrective feedback treatment the students received clearly was more effective than Group A and B's with error map accuracy rate of 87 percent. Uptake was significantly higher for this group looking at their accuracy percentage rates for their writing portfolio reflections at 78 percent. This seems to strongly suggest uptake was greater for this group. Group C's average total percent accuracy of 83 percent is significant, and such an outcome is reflective of a seemingly effective treatment.

Discussion

This study aimed to investigate whether written corrective feedback and academic writing accuracy error maps help students develop autonomy, improve teacher feedback, and foster greater student uptake.

Addressing the first assumption, whether corrective feedback is an effective means to assist student awareness of academic accuracy writing errors, the findings for Group C strongly suggest the treatment used for this group, and how that treatment impacted the corrective feedback for this group on student papers support the results of this study in which Group C had significantly higher accuracy rates on their error maps and writing portfolio work than did Group A and B. Using such methods in an academic writing course should enable students to fully take advantage of written corrective feedback on their written work when coupled with the host of other process approach to writing methods used in this study's treatment for Group C. Corrective feedback alone did not provide students with sufficient knowledge of their academic writing accuracy errors, as was the outcome of the study for Groups A and B due to the treatment offered to these groups.

In order to fully take advantage of written corrective feedback, the researcher suggests students need to use error maps in a manner that fosters the following three aspects: immediacy, relevance, and process. Error maps need to be used as soon as possible after a written assignment to enable students to process teacher written corrective feedback on their written work. Students need opportunities to understand the relevance of such written corrective feedback. One method for enabling relevance of written corrective feedback is to use error maps, and combine those results with diagnostic tests results logged on error maps, written corrective feedback on papers logged on error maps, and additional form-focused instruction that is targeted to students academic accuracy error strengths and weaknesses as reflected on each students error map. Finally, students need to be given opportunities to recycle all of the relevant information in order to fully develop autonomous control over their academic writing accuracy errors. Using the methods mentioned above will enable such recycling to take place. Using these methods, according to the results of the present study, should enable students to take full advantage of written corrective feedback on their papers.

The second assumption considers whether corrective feedback is necessary to develop autonomy in academic writing courses. The results for Groups A and B suggests the treatment employed in the study provided the students with little effective feedback to develop their awareness of their academic writing accuracy errors, so the participants in the study failed to develop a sense of how to self-correct errors. Groups A and B accuracy percentages on their error maps and writing portfolio preface assignments were far below what would be considered an effective treatment, or method to use in academic writing courses since students showed no improvement in the ability to understand which academic accuracy writing errors they made. Therefore, it can be assumed that the use of effective methods of corrective feedback is necessary to develop autonomy in an academic writing course. For example, Group C's treatment provided this group of students with effective written corrective feedback that built autonomous knowledge awareness of their academic writing accuracy errors. Based on the outcomes in this study, use of the correct type

of feedback coupled with error maps, as part of the corrective feedback process, can develop the ability to correct work autonomously, and the research carried out by Ahswell (2000) and Fatham & Whalley (1990) found similar results. This was the case with the results for Group C shown on their accuracy percentages for error maps and writing portfolio preface assignments. The results for Group C strongly support the use of written corrective feedback together with the use of error maps in academic writing courses to develop autonomous knowledge students have of their academic writing accuracy errors. Any writing course at the university or secondary level could benefit from these methods due to the convincing outcomes in the present study, especially when looking at the results for the treatment group C.

The third and final, assumption considers whether or not error maps serve as an additional useful method in the corrective feedback process to develop autonomy, enhance teacher feedback, and improve student uptake of academic accuracy writing errors. Autonomy has been addressed in the previous discussion, yet it is important to understand Group C's treatment developed the abilities of students in this cohort to self-correct autonomously their academic writing accuracy errors; providing great strides in fostering independent knowledge of particular accuracy errors catered to each individual student. Rather than covering grammar randomly for a class, the instructor can assist each student in discovering their own particular accuracy strengths and weaknesses, which is a far superior instructional outcome than just covering grammar topics in a linear method in class, or as homework in a writing course. Teacher feedback then becomes far more targeted to each individual students needs. Error maps appear to be the key step in the feedback process to develop such autonomous outcomes in academic writing courses. Uptake of such teacher feedback for Group C is far superior to either Group A or B. Based on student accuracy outcomes on error map data and writing portfolio assignments, Group C benefited from teacher feedback far greater than either Groups A and B. Here again, error maps help to improve communication between student and teacher. Student uptake outcomes were far greater than the other two groups. Finally, error maps assisted students in their processes of acquiring knowledge of their academic writing accuracy errors,

completing the feedback process.

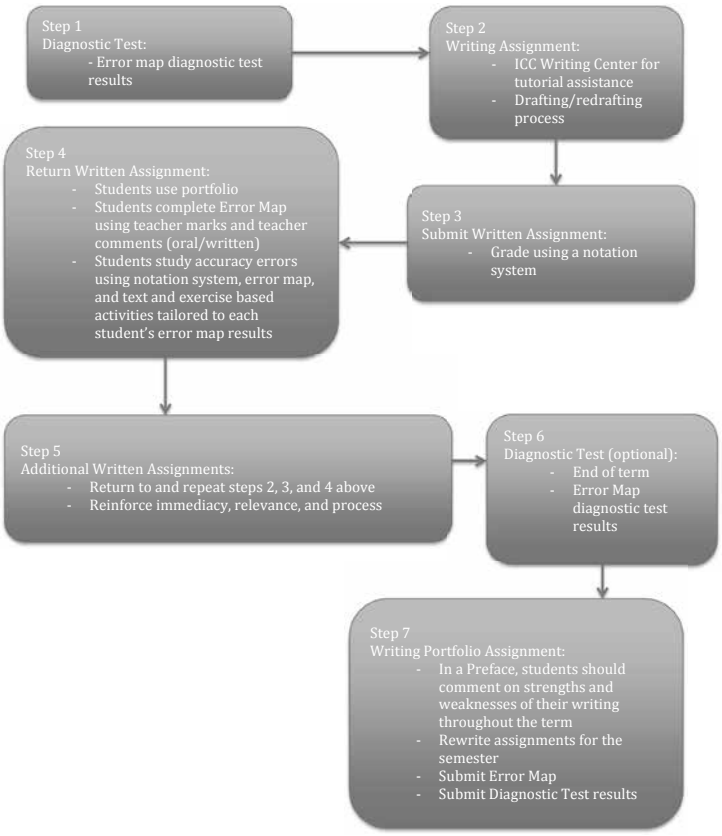
Using Error Maps in an Academic Writing Course

How can error maps be incorporated into an existing academic writing course? I use error maps in all of my writing courses. Advanced students as well as intermediate students can easily understand the corrective feedback process when error maps are used. Students can learn to use these if the teacher designs the error map to fit the language skills of students they wish to use the error map with. For example, grammar categories are flexible. The teacher can choose language their students are familiar with. I chose the terms in the error map in Appendix 1 since they match the terms used in the writing handbook used in my current courses. I use Rules for Writers 7th Edition published by Bedford/St. Martin's. I use this handbook with advanced students. Another flexible component of the error map is the writing assignments the teacher can include on the error map. I include diagnostic tests labeled as DT1. Then I include all writing assignments, excluding a research paper and writing portfolio, students will do by the end of the school year labeled as WA1. Additional diagnostic tests are included as well since these can help students to quantify additional accuracy problems they might have. It helps to build on teacher directed feedback. I have found these useful to sell the students on the idea that the feedback on their error maps as well as that given on their papers is relevant since they correlate. They can also help students judge whether or not they are making improvements.

I have found the best method to introduce error maps to a new class is to have students take a diagnostic test early in the term. I use Exercise Central. I like this diagnostic test since the results are immediate and the students can print the results. Students then match errors on the diagnostic test to their error maps. This process helps students quickly identify the benefits of using error maps. It also helps to introduce the error map to the class. When the students receive their first written assignment back with corrective feedback comments from the instructor, they can

easily fill out their error maps. The above procedures explain Step 1 found in Error Map Teaching Procedures.

Error Map Teaching Procedures



Step 2 centers around a slightly altered approach to traditional process writing methods. Students are given a writing assignment. In advanced courses students are encouraged to draft and redraft papers using a writing center available to them. Intermediate students are given class time to work on drafts as well as encouraged to use a writing center.

Step 3 in the process involves simply having students hand in final drafts for grading. Utmost care needs to be given to marking and grading the papers since the students are required to pay exact attention to teacher provided corrective feedback to complete the error map when the paper is returned. I use a notation system to avoid problems of ambiguity. The handbook for the course uses a numbering system to identify sections of the textbook. This numbering system allows students to self-identify teacher markings on their papers. It helps tremendously with avoiding problems with confusion over the most carefully crafted teacher feedback on written assignments.

Step 4 allows students to switch on the corrective feedback the teacher has given on their papers because this step involves marking the error map. I give class time to start the process. This allows students to ask questions if confused on how to mark the error map, or to clarify teacher comments they may not be able to decipher. Typically, the full process of marking the error map is completed at home. The students also keep a traditional writing portfolio at this stage. The students keep the work they feel best represents their writing in the portfolios.

Step 5 involves practice. Students are given additional writing assignments. The writing process repeats itself for Steps 2-4. One additional instructional outcome in Step 5 is when students begin to recognize individual grammar strengths and weaknesses from their error map marks. I provide classroom time for students to study these grammar weaknesses using the companion Web site to the handbook used in the course. In addition to this class time that focuses on individual instruction, students are given reading assignments from the handbook that cover additional grammar, clarity, punctuation, mechanics, and ESL/EFL challenges with writing in the English language.

Step 6 involves another diagnostic test for the reasons mentioned previously. This is an optional step you may wish to consider dependent on the length of the term and the curricular goals and objectives established.

Step 7 is the last process. This step helps to close the circle. It lets the teacher know if students have truly grasped the information provided to them throughout the term or school year. I have students keep a portfolio for the semester. Best products are kept near the front of the portfolio, while all written work is kept in the portfolio at the back of the folder. At the end of the term, students select two assignments to rework for discourse and accuracy. The accuracy component is dependent on error map tick marks as well as the corrective feedback provided on the original assignments. Completed error maps must be included in the portfolio. In addition, all copies of diagnostic test results must be included in the portfolio. I ask for these two items to attempt to assist with the uptake of error map marks and corrective feedback given to students throughout the term. The most relevant portion of the portfolio assignment to the error map is the preface students are required to write. The preface asks students to comment on strengths and weaknesses of their writing throughout the term. This enables students to fully grasp the markings on their error maps as well as consider corrective feedback provided on student papers. The hope is to fully close the circle that was initiated at the beginning of the term.

Conclusion

The present study was inspired by the works of Ahswell (2000) and Fatham & Whalley (1990) to investigate whether corrective feedback is an effective means to assist students to become more aware of academic writing accuracy errors and develop autonomy. An additional method used in the corrective feedback process in this study is the error map. Although this study found similarities and differences with the previous studies, corrective feedback was shown to develop student awareness of academic writing accuracy errors, but the use of error maps provided a dramatic improvement over using corrective feedback alone. The present study indicates that error maps, as part of a process approach to writing and corrective feedback, are an effective means to assist students to become more aware of academic writing accuracy errors and develop autonomy. It seems to offer grounds for further research as to

which variables, corrective feedback or error maps alone, lead to greater differences in the groups studied.

With regard to the limitations of the study, first, the class level used in the study was an advanced level class in which the students had great incentives to improve their academic writing accuracy in order to earn the right to participate in study abroad programs. It may be premature to claim that the findings in this study could apply to other L2/additional language university level writing courses. Second, the research results might have been more reliable if there had been a second coder who, in addition to the researcher, kept error maps for the three groups in the study. However, one was not available for a period of three years due to limited resources. Lastly, the study might have benefited if more introspective data from the researcher and students had been collected to further account for the findings.

Nonetheless, the results of the current study were unique in many interesting aspects. In this particular language learning context, error maps were effective in developing autonomy, enhancing teacher feedback, and heightening student uptake. Autonomous learners are familiar with the purpose of their course work. They also take greater responsibility in their own learning. Finally, they participate in evaluating their own learning and how useful such learning is (Holec 1981, Little 1991). Autonomous learners can benefit from the use of error maps in addition to significant gains in feedback uptake. To summarize the results of the study, Group C responses on error maps and in the preface of the writing portfolio assignment had such an improved accuracy response ratio compared to Groups A and B that the researcher is extremely hopeful further studies can reveal similar outcomes. Grosofsky, Payne, & Campbell (1994) have argued that participants remember items that they have generated in response to some kind of cues better than the items that have just been presented to them, an autonomous skill. Grammar instruction may serve a purpose in writing courses, but the tailored feedback error maps provide learners certainly seems to take huge leaps forward in helping learners individually become aware of academic writing accuracy errors. As these researchers reveal that learner response

to corrective feedback seems helpful in language learning, the researcher hopes the next phase of academic writing and accuracy research will explore the relationship between error maps and its contribution to academic writing accuracy development.

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Appendix 1: Error Map

Error Type	DT1a	WA1	WA2	DT1b	DT2a	WA3	WA4	DT2b
Misplaced and dangling modifiers								
Commas								
Other punctuation								
Verb problems								
Adjectives and adverbs								
Spelling								
Subject-verb agreement								
Commonly confused words								
Apostrophes								
Capitalization								
Coordination and subordination								
Parallelism								
Quotation marks								
Pronouns								
Word use								
ESL/EFL								
Run ons								
Fragments								