Frequency and Types of Revision Made
in Wiki Assisted Writing Classroom

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Abstract: Some writing classrooms have included the use of computer-mediated communication (CMC) online tools to facilitate and enhance students' writing process. This case study investigates how one of the tools, namely wiki can be used in writing as a process (versus writing as a product) activity in providing feedback to students' academic report. Data consisted of the feedback given and revisions made by ESL engineering students via wiki. The students' first and final drafts were also evaluated for writing improvement. In addition, they were interviewed using semi-structured interview technique. Findings show that they made various surface level revisions after receiving feedback via wiki and these revisions resulted in an improvement in their final draft. The findings of the study suggest that wiki provides a platform for process writing activities without the need for face-to-face interaction. However, a supportive teaching and learning environment is essential to ensure a greater impact of the tool on process writing activities.

Key words: Computer Mediated Communication · Process writing · Feedback · Revision · Wiki

INTRODUCTION

Peer review, self-evaluation and teacher feedback provide the impetus for students to revise their work [1]. Revisions involve making changes to texts and the changes may take various forms. Many studies have been conducted on students' revision practices. In one of the studies, [2] found that inexperienced writers revised more than expert writers. [3], on the other hand, found that unskilled writers revised less frequently than skilled writers. In a study by [4], second language (L2) writers reflected less on their writing but revised more producing a less effective piece of work. The participants' different backgrounds and the different focus of study might be the reasons for the different findings. These findings indicate the need to have more studies on revision in various contexts to give a more comprehensive picture of students' revision practices. The present study explores the types of revisions made when a social technology tool is used in teaching technical writing to L2 learners of English.

The availability of social technologies makes it possible for students to get feedback beyond the classroom. Corrective feedback given via written synchronous computer-mediated communication helps to alert learners to the nature of errors made [5]. One such facility is wiki. It is argued that the open editing and review structure of wiki helps to facilitate collaborative writing [6, 7].

Wiki in Process Writing Classroom: Wiki is one of the computer-mediated communication (CMC) tools that can be used to teach writing. It is a Web 2.0 authoring tool which allows users to share and collaborate on the World Wide Web. Its editable authoring facility makes it a convenient tool for revision. Wiki's sharable content allows multiple editors to contribute to the development of a text. The absence of face-to-face contact makes it less face-threatening to some users. Such a possibility may help to facilitate the process of learning. However, research on the implementation of wiki in the writing classroom has mainly concentrated on the effectiveness

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Fig. 1: History Function of Wiki

of utilizing wiki for collaborative writing activities [6, 7]. Relatively few research works have explored the impact of using wiki in the process writing classroom on individual student's writing development. This study will investigate the quantity and quality of revision made by L2 learners when wiki is used as a writing tool.

Studies, which investigated the use of wiki for collaborative writing activities, have unearthed several features which make wiki a conducive environment for process writing activities [6]. The page history facility on wiki provides information on the date and time of editing, the editor and what was edited. Teachers can easily monitor their students' writing development and give feedback at any stage of the writing process [8]. In turn, students can use the facility to keep track of the feedback given and make revisions to their written work. A sample of a history page of a wiki is given in Figure 1:

An increasing body of research has delved into using CMC tools to mediate feedback and facilitate revision. For example, studies have revealed that ESL students receiving feedback through this medium revised their drafts more frequently and these resulted in an improvement in the quality of their writing, more than the improvement made by ESL students receiving face-to-face feedback [9, 10]. This could be the result of the environment provided by CMC tools which is conducive, less anxiety-ridden and allows for multiple audiences of not only one-to-one, but one-to-many and many-to-many feedback [11]. This can be done with teachers as well as others at the same or different locality. What is yet to be explored is the type of revisions made by L2 learners when wiki is used as a revision tool in a language classroom.

Types of Revision: [2] were among the earlier language practitioners to explore ways to analyse revisions made by students in their written work. In 1981, they came up with a *Taxonomy of Revision Changes* to illustrate the types of revision that could occur in a piece of written work. The taxonomy differentiates between "revisions that affect the meaning of the text and those that do not" [2] (p. 401). They categorised these into Meaning and Surface Changes. Surface changes are categorised into formal and meaning-preserving changes while meaning changes are divided into Microstructure and Macrostructure Changes. They hypothesised that meaning changes would result in better texts. However, due to lack of evidence to support the hypothesis they cautioned against making such simplistic conclusions. Instead they urged teachers to look deeper into which changes result in an improved text.

[9] in her study reiterated [2] concern in making simplistic generalisations about the relationship between types of revision and text quality. In her study, she found that a high occurrence of revisions at meaning level did not necessarily result in increased text quality. Several students who made many meaning revisions showed text improvement but others who also made many meaning revisions showed negative text improvement. On the other hand, students whose revisions were mostly formal surface changes showed improved text quality. These findings point to the fact that there is a lack of strong evidence to support a correlation between meaning revisions and text improvement. This is supported by [11], who in their study also found no significant correlation between the total number of meaning revisions and improved text quality. Some students did more revisions
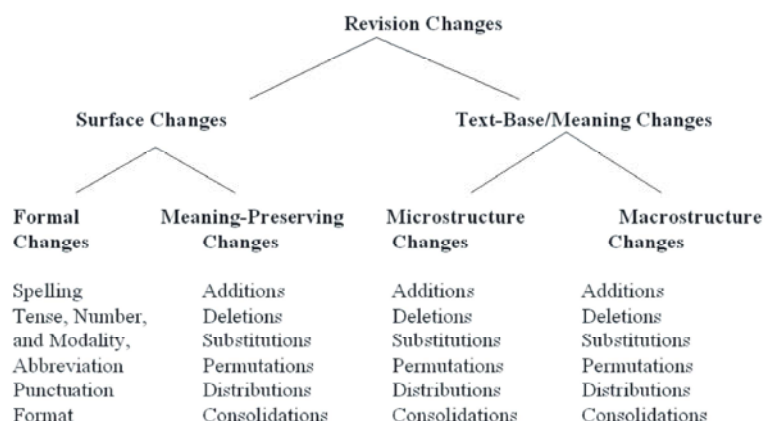
Fig. 2: Taxonomy of Revision Changes (Faigley and Witte, 1981:403).

at meaning level but produced texts with lesser quality. They concluded that this could be the result of students' lack of language proficiency. Thus there is a lack of conclusive evidence to indicate a positive relationship between the number of revisions or meaning revisions and text improvement.

In L2 studies on the impact of revision on written work, a number of teachers have also used [2]'s taxonomy to analyse revisions [9, 10, 12, 13]. Some added earlier studies by looking at text quality as well as types of revisions [9, 10, 12]. for instance, states that meaning revisions initiated by trained peer feedback resulted in writing improvement in her ESL students' narrative writing. In her study, [10] concludes that the types of revisions that could lead to better texts are substitutions, permutations and reordering at micro-text level. Another aspect of revision that is worth examining is the impact that a tool has on facilitating revisions on the students' quality of writing. Given a tool that makes revision process more visible and easier to accomplish, students may revise more and this may result in an improvement in their writing. Wiki is one such device.

Research Questions: This study examines the types of revisions made by students upon receiving feedback on their wiki. The study is guided by the following research questions:

- What are the types of revision changes made when feedback was given?
- What is the frequency of revisions made?
- Is there any improvement in the quality of report produced?

Method: This study used the case study approach as its research design since it aimed at looking at one particular phenomenon. This case study was conducted over a ten-week period at University Pahang Malaysia, which is an engineering university. Methodological triangulation of data from multiple data sources was conducted to derive sound conclusions [14-17]. Field data collection included participant-teaching, analysis of documents and semi-structured interviews. Faigley and Witte's (1981) taxonomy is used in analyzing the quality of students' revisions. The taxonomy is given in Figure 2:

Participants: Participants of the study consisted of seventeen students following an Undergraduate Research Project (URP) course at University Pahang Malaysia. Purposive sampling was adopted to seek a rich and thick description through in-depth study of a particular subject [17, 18, 19]. Purposive sampling is commonly used when a teacher selected participants based on his/her knowledge of the participants and their relevance to the purpose of the study [20]. The participants, who were all 21 years old, use Malay as their mother-tongue. The students' English proficiency level was intermediate.

In this research, students were assigned a supervisor who was a member of the Engineering Faculty. The language teacher provided language input to the students' project works. The students were given the choice whether or not to join the language support course.

Procedures: At the onset of the study, the students were instructed to register for a wiki account at *wikispaces.com* and post their drafts on this site. Students were expected

to post their drafts on wikispaces for ten weeks, that is, until the submission date to the faculty. The report was open to the public to read and make changes.

Throughout the duration of the study, the students were assigned to write a research report based on an engineering topic which encompasses five chapters: introduction, literature review, methodology, expected results and conclusion. The language teacher and the students met once a week for a period of two hours a week. In the first six weeks of these sessions the teacher provided input on how to write each chapter of the report especially on how to organise the sections and content in each chapter. For the next four weeks the students spent their time on the report. Revisions made by students were done on their wiki and they could revise as often as they liked. The final draft was evaluated by two assessors after it was published on the website.

Apart from their revisions, students' first and final drafts were also assessed. Data gathered was analysed to examine the kind of revisions made via wiki and the quality of work produced. Their revisions were analysed to examine whether the changes were made at the level of meaning or structure (form versus function) [21]. Two experienced raters assessed the drafts for content, language, organization, vocabulary and mechanics. Inter-rater reliability was high with Cronbach alpha coefficient $\dot{\alpha} = .80$ for the first draft and $\dot{\alpha} = .82$ for the final draft. Writing improvement was calculated by subtracting the mean score of the first draft from the final draft. The students were also interviewed using in-depth, semi-structured interview technique to gauge their perceptions of using wiki for process writing activities.

RESULTS

The students received both content and form feedback from the language teacher, their supervisor and a few visitors to their wiki pages.

Research Question 1: What are the types of changes made when feedback was given?: Analysis of the students' reports revealed that more than half (83%) of the revisions done were surface changes. The remaining (17%) were meaning changes. The surface changes made by students in this study were mainly formal changes which neither changed the meaning of nor added new information to the text (e.g. spelling, formatting and tenses, modality or punctuation). The number of revisions and the examples of the revision done are reflected by Table 1:

One of the reasons given by the students for making more surface than meaning revisions was that they referred to journal articles for ideas and were afraid to make too many changes to the original sentences since they were not really proficient in English. To avoid plagiarising the original works they substituted words in the original texts with similar words rather than paraphrasing or synthesizing. In addition, they felt that the subject-matter (Engineering) was difficult and thus they did not want to risk making mistakes when quoting.

Research Question 2: What Is the Frequency of Revision?: Students' reactions to the feedback given vary. On average they used 82% of the feedback provided via wiki. They made a total of 1,282 changes after receiving the feedback. Table 2 presents the number of feedback received by students and the number of changes made upon receiving the feedback:

When interviewed, some of the students claimed that they revised everything after receiving feedback, while others said they revised between 20-70% of the feedback provided via wiki. In actual fact the students used between 57-94% of the feedback provided via wiki. This suggests that the students did not necessarily revise their draft after receiving feedback via wiki. The reasons given by those who did not revise everything included receiving too

Table 1: Students' Revisions Via Wiki

Type of revision	N = 1830 (%)	Examples of revision	
		Before revision	After revision
Surface changes (doesn't change meaning/ gist of text)	1511 (83%)	To identify the most optimum reflux ratios.	Deletion: To identify the optimum reflux ratios.
Meaning changes (changes meaning/ gist of text)	319 (17%)	Patchouli oil is one of the important natural essential oils used to give a base and lasting character to a fragrance in perfumery industry.	Elaboration: Patchouli oil is one of the important natural essential oils used to give a base and lasting character to a fragrance in perfumery industry. The essential oil of Patchouli is extracted from the leaves. The leaves need to be shade dried and partially fermented before distilling.

Table 2: Summary of Feedback via Wiki Used by Students

Student	Feedback received		Feedback used		% Feedback used/
	n	%	N	%	Feedback received
S1	128	8.2	104	6.7	81.3
S2	89	5.7	73	4.7	82
S3	123	7.9	81	5.2	66
S4	78	5	52	3.3	67
S5	136	8.7	112	7.2	82.4
S6	43	2.8	35	2.2	81.4
S7	107	6.9	100	6.4	94
S8	85	5.5	75	4.9	88
S9	72	4.6	62	4	86
S10	107	6.9	67	4.3	63
S11	72	4.6	59	3.8	82
S12	52	3.3	37	2.3	71
S13	91	5.8	82	5.3	84
S14	41	2.6	35	2.2	85
S15	226	14.5	220	14.1	97
S16	86	5.5	75	4.8	87
S17	23	1.5	13	0.9	57
Total:	1559	100	1282	82.2	82

much feedback, having too little time to revise and being unsure of how to revise according to the feedback provided.

S16 : *I don't have much time to go through the wikispace.*

S5 : *I use all the feedback but sometimes I don't know how to correct.*

Five of the students (S3, S9, S10, S11 and S12) said that they referred the feedback they received via wiki to their content supervisor. They would only revise upon approval of their supervisor. For instance, S12 referred to her supervisor when the language teacher suggested that her conclusion was too broad and her supervisor responded by providing a more specific alternative. S12 again discussed this with the language instructor for language accuracy and appropriateness before revising accordingly. Similarly S3 asked her supervisor if she could use the reference style suggested by the teacher via wiki. Her supervisor allowed her to use the reference style because it was the standard format. She revised her reference style only after her supervisor agreed. However, her second supervisor who took over from her first supervisor did not allow her to use the format suggested by the language instructor. Thus although the reference style recommended by her second supervisor did not comply with any of the standard reference styles available, S3 still adhered to her second supervisor's advise because he would be the one marking her URP 1 report.

In the individual interviews with twelve of the students in this study, they claimed that they were receptive of feedback and would use any feedback provided to their report. For instance, S9 said that feedback:

is like a guide (which) helps in writing my report. At the first I just write and know a little about the topic, after correction by correction I get to know a lot about the topic. Every time I receive feedback, you'll read some more and write.

S14 added that;

feedback is important so that feedback givers can tell me when I (have) not fulfilled to make them understand – the message (is) not delivered.

Three of the students (S10, S11 and S15) also said that feedback provided via wiki increased their audience awareness.

S10 : *Yes, I like the wikispaces because I enjoy getting feedback. I get other's perspectives.*

S11 : *Yes, the wikispaces is good. We can get feedback and see how others see our writing.*

S10 liked the fact that her report could be read by multiple audiences from all over the world. She became excited when she was shown her wiki statistics function (Figure 3) and saw that she had people from other countries visiting her site even
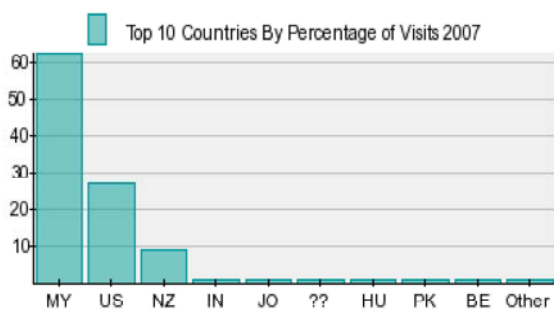
Fig. 3: S10 Wiki Visitors According to Country

though they did not provide any feedback. According to her, it encouraged her to improve her report further.

Another student who welcomed the bigger audience was S2. He felt that the feedback could help him improve the language as well as content of his report. He was very positive about the whole experience and even welcomed negative feedback because he saw it as a "learning process".

S2 : *I think its ok because they know I'm still a student. It doesn't bother me when they say my report is kind of like secondary school report. I do this because I want to learn.*

The feedback via wiki was also considered to be "immediate" and "constant" because of its "any time, any place" factor (S3). The facilities on wiki helped students to improve their paper. For example, S14 liked the fact that the feedback provided to his report was highlighted and colour-coded by the software. In this way he could keep track of the feedback received and the revision done more easily.

S13 brought forth an interesting fact about using wiki for feedback. She said she liked using the tool for feedback because she would not have to see her supervisor face-to-face:

S13 : *Sometimes the supervisors' facial expression may seem angry and can stress the student into thinking their paper is not good enough, but with wiki you can receive feedback without the facial expression.*

The students also indicated the types of feedback they preferred to receive via wiki. Some students wanted both content and form feedback via wiki:

S16 : *I think all elements are important for me like contents, language and all that to write the best thesis. My flow is correct but my language is not so good so I'm not satisfied about it.*

Other students were more specific on the type of feedback they preferred to receive via wiki. They wanted feedback either on delivery of the overall message, specific content or language of the report:

S3 : *For me, if my reader cannot understand my writing, I like the way they criticize like put in details and state what sort of process like format and things like that. Although it supposedly technical report, if the message is not delivered, how can I write a good article, right?*

S16 : *How to write literature review and introduction and how to make it interesting.*

S13 : *Feedback on language. Because I poor in language.*

S2 : *I more looking for feedback on contents and ideas of the report. And people that can manage to give more idea and more things about my project. I'll be more satisfied*

S15 : *When I receive feedback on language then I know I can write better.*

Most of the students felt that their reports had improved after receiving feedback via wiki. Their supervisors also commented that they could see improvements in some students' work. They said that this could be due to the feedback given by the language instructor via wiki because they did not give any feedback on language and organization of ideas.

Research Question 3: Is There Any Improvement in the Quality of Report Produced?: As a result of the revisions, 16 of the 17 students showed improvement in writing between the first and final drafts. The mean improvement was 11.6. A Wilcoxon test carried out shows a statistically significant improvement between the first and final drafts ($p \leq 0.05$). The improvements could be seen in all five categories that were assessed: content, organization, vocabulary, language and mechanics. The highest mean improvement between the first and final draft was for language (3.5) followed by content (2.8), vocabulary (2.8), organization (2.2) and mechanics (0.3) (Table 3).

Table 3: Improvement in Writing of Each Component of the *ESL Composition Profile*

ESL COMPOSITION PROFILE	First Draft (mean)	Final Draft (mean)	Mean improvement (mean)
CONTENT (30%)	17.8	20.6	2.8
ORGANIZATION (20%)	12	14.2	2.2
VOCABULARY (20%)	10.6	13.4	2.8
LANGUAGE (25%)	12.2	15.7	3.5
MECHANICS (5%)	2.8	3.1	0.3

This indicates that the form-focused feedback given by the teacher facilitated improvements of students' reports, particularly the language element of the draft.

DISCUSSION

The study shows how a technological tool such as wiki can be used in a team-teaching environment. It allows the language to be taught in a more 'associated' manner [22]. The errors made in this study reiterate [4]'s meta-analysis of 72 studies on the composing process of L1 and L2 writers. The students had difficulties generating the language and materials for writing. In this study, students tended to plagiarise other peoples' work especially in the literature review section. The reasons given were comparable to the participants in [23]'s study. The scientists in his study stated that patchwriting was a more accurate and less time-consuming way of writing their research reports. The students in this study also felt that the content would be more accurate if they plagiarize than if they were to paraphrase the sentences. [24] said that this was a common phenomenon with non-native writers. She considered patchwriting a writing strategy used widely by non-native writers.

Nevertheless, the students in this study like those in other studies [25-30] were positive about using a web-based tool to receive feedback. Nine of the students felt that the feedback received via wikis enhanced their audience awareness and gave them access to a wider audience. To them the facility could be used to get immediate, constant and less face-threatening feedback. In this study, it was found that even though the tool could facilitate authentic communication with multiple audiences [30, 31], it was not fully utilized by some of the content supervisors. [32] and [33] believe that a supportive teaching and learning environment is essential in the implementation of any computer technology in the classroom.

CONCLUSION

The study has illustrated how wikis can be utilized as a feedback tool in developing report writing skills. The majority of the students found wiki environment conducive for immediate, continuous and authentic feedback between one-to-one and many-to-one. The findings of the study show that most of them used the feedback given to revise their drafts. As in many other studies on second language learners, students in this study also made more surface than meaning revisions which were mostly at word or graphical levels. The virtual medium of writing also increased the tendency for students to make such revisions. The changes reflect the way in which students used feedback received via wiki.

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