

INVESTIGATING THE EFFECTS OF WIKI-BASED IMPLICIT CORRECTIVE-FEEDBACK ON L2 LEARNERS' WRITTEN PRODUCTIONS

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ABSTRACT: *Providing feedback to and correcting errors of learners' language performance is important in both first (L1) and second language (L2) teaching and learning process. A number of studies have examined the effectiveness of different types of corrective-feedback (CF) on L2 learners' writing and results showed positive effects (Ahmadi et al. 2012; Kamberi, 2013; Lyster & Saito, 2010). However, little has examined the effects of CF on L2 writing via wiki (Zailin, 2010; Zailin, Nik & Ainol, 2012). Therefore, the current study aims to provide further insights into the effects of implicit CF on L2 learners' writing through wiki. Nineteen (n=19) undergraduate L2 learners doing English at University Malaysia Pahang were enrolled in the study. During the pretest session, the learners were required to write an essay on Communication Skills at Workplace for approximately one hour. Next, implicit CF was provided to the essays, and a week later during the posttest session, the learners revised their essays based on the feedback given. Results indicated that wiki-based implicit CF helped L2 learners to improve the accuracy and fluency of their written productions. While the result also revealed a positive influence of CF on lexical complexity to a certain degree, syntactic complexity was not affected.*

Key words: *Implicit corrective-feedback, wiki, CAF*

1. BACKGROUND

Corrective-feedback (CF) is deemed important in both first (L1) and second (L2) language learning. CF serves as a hint to the learners that their use of the target language is incorrect (Lightbown & Spada, 1999) and is significant in writing classes (Biber et al., 2011). It is debated whether teacher should treat learners' errors as part of the L2 learning process (Ferries, 1999; Ferries & Roberts, 2001; Ferries et al., 2013; Truscott, 1996) One of the arguments is put forth by Truscott (1996, 2004, 2007 & 2010) who claimed that error correction is ineffective in language classes. Truscott (2007) insisted that error correction could have negative effects on learners' ability to produce accurate language, and he added "we should be confident whether if the correction has any actual benefits that will be very small" (p.256). Likewise, Truscott and Hsu (2008) claimed that CF was not only ineffective but harmful to L2 learners, and argued that error correction should be abandoned. In their study, learners were asked to revise their written

drafts based on the feedback during the posttest session. The findings revealed that CF did not help learners improve the accuracy of their written drafts.

However, there are studies that provide evidence in support of CF (e.g. Bitchener & Knoch, 2010; Farid & Samad, 2012; Ferries, 1999; Ferries et al. 2013; Kao, 2013; Meihami, 2013; Mourssi, 2012; Williams, 2003). For instance, Ferries and Roberts (2001) observed two groups of learners to examine the influence of grammatical error correction on the learners' work. They found that the group received CF gained more accurate language over the control group. Findings of the study by Chandler (2003) correlated to the findings by Ferries and Roberts (2001). Thirty-one ($n=31$) L2 learners were assigned into two, i.e., 16 in control and 15 in experimental group. The two classes were taught by the same teacher in reading and writing because most of the Asian learners were reported not having extensive writing training in English during their high school, and were asked to write about five pages doubled-space sitting on their own life. Learners in experimental group were required to revise and correct all the errors indicated by the teacher before submitting the next assignment; however, the control group made all corrections at the end of the semester. Total number of errors/total number of words 100 ratio was analyzed to measure accuracy while total number of words/the amount of time spent ratio was used to measure fluency of learners' written productions. Analysis of covariance was used to investigate differences in the results of the experimental and control groups. Results found no significant difference on the first assignment between the two groups $t=2.05$, $p>0.05$. Meanwhile, her study did not show significant difference of the mean error for 100 words of control group when the data was analyzed from first and fifth assignment as evident in $t=-0.90$, $p>0.05$. On the other hand, there was a significant difference in the grammatical and lexical errors per 100 words in which the learners in the experimental group made an average of 7.8 errors in their first assignment and reduced to 5.1 errors per 100 words in the fifth assignment $t=4.05$, $p<0.05$. Recently, Meihami (2013) put Truscott's (1996, 2007) claims into test. Contrary to Truscott's (1996; 2007) claim that error correction may only have value for non-grammatical errors; the study by Meihami found that learners who were provided with CF significantly produced more accurate $p=0.049<0.05$ language over those who did not receive CF $p=0.52>0.05$ on their work. Similarly, Williams (2003) believed that CF encouraged learners to produce writing with minimal errors and maximum accuracy and clarity.

In addition, Van Beuningen, De Jong, and Kuiken (2011) highlighted that CF not only helped learners improved the accuracy of their writings in short term, it also provided them with a long term benefit. In contrast to Truscott (2007), they found that if correction was targeted on specific types of errors, it would have positive effects on linguistic accuracy of learners' language productions. In line with this argument, Kao (2013) affirmed that by targeting specific language features for error correction, it not only assisted learners' to improve linguistic accuracy of their written productions in the long term, it also pushed them towards effective communication. In terms of linguistic accuracy, Evans, et al. (2011) asserted similar findings to Van Beuningen, et

al. (2011) and Kao (2013). Thirty ($n=30$) undergraduate ESL learners were assigned into two a control and treatment groups. During the semester, the learners in the control group engaged in a total of 20 pages of writing including editorial, rhetorical analysis, and a research paper; while learners in the treatment group engaged in short paragraphs writing for ten minutes with an overall total of 19 pages. In contrast to the control group who did not receive any feedback, the treatment group was provided with the written CF focusing on form errors. Error-free clause ratio was analyzed to measure the accuracy of learners' written productions. Results illustrated that written CF helped learners in the treatment group improved the linguistic accuracy of their written productions over those in the control group.

Other than the impact of CF on linguistic accuracy, a few studies investigated the impact of CF on complexity and fluency of learners' written productions (Chandler, 2003; Fazilatfar et al. 2014; Marzban & Arabahmadi, 2013; Meihami, 2013; Robb et al., 1986). For example, Robb et al. (1986) found that CF had a significant positive effect on complexity of learners' written productions, but the study only dealt with treatment groups and there was no control group. Therefore, it cannot be judged to say that CF had a significant effect on complexity of learners' language productions. In addition to Robb's (1986) study, Fazilatfar, et al. (2014) investigated the effects of written CF on syntactic and lexical complexity. Thirty ($n=30$) advanced English language learners were enrolled in an experimental and control groups. Learners in the experimental group received unfocused written CF while those in the control group did not. Mean length of sentence and dependent clauses per clause ratios were analyzed to measure the syntactic complexity; while lexical complexity was measured using lexical density and lexical variation. Result of the study by means of MANOVA revealed a significant difference between the two groups. It showed learners in the experimental group significantly gained more syntactic complexity over control group as indicated by $F(2, 55) = 4.37, p = 0.017 < 0.05$. Likewise, the result showed that after providing unfocused written CF, learners in the experimental group outperformed the control group in lexical complexity as evident in $F(2, 55) = 5.01, p = 0.010 < 0.05$. In terms of syntactic complexity, Meihami (2013) found similar results to Fazilatfar, et al. (2014) that CF assisted learners to improve the syntactic complexity of their written productions. In the study, Meihami observed that when CF on compound sentences was provided to the learners, the mean score increased from $m=7.45$ in pretest to $m=8.30$ in the immediate posttest. On the other hand, when he stopped providing CF, the mean score decreased from $m=8.30$ in the immediate posttest to $m=7.50$ in the delayed posttest. Similarly, the mean score of learners with no CF decreased from $m=7.25$ in pretest to $m=4.85$ in the delayed posttest. Even though the findings of the study showed that CF helped learners improved the complexity of their written productions, Meihami (2013) suggested for more research in the area to clarify the effectiveness of CF on complexity of learners' language productions.

On the other hand, the findings of the study by Marzban and Arabahmadi (2013) contradicted the findings of the study by Fazilatfar, et al. (2014) and Meihami (2013). For instance, they found no

significant effect of CF on complexity of learners' written productions demonstrated by $p > 0.05$. Likewise, in terms of fluency, the findings of the studies by Chandler (2003) and Marzban and Arabahmadi (2013) contradicted each other. For instance, Chandler (2003) found that CF significantly affected the fluency of learners' written productions and helped learners in the two, i.e. control and experimental groups to produce more fluent language shown by $t = 3.65$, $p = 0.004 < 0.05$ and $t = 2.50$, $p = 0.027 < 0.05$, respectively. Conversely, the findings of the study by Marzban and Arabahmadi (2013) showed that CF did not affect the fluency of learners' written productions indicated by $p > 0.05$. As indicated in the literature above, researchers have different beliefs about the effectiveness of CF based on their research findings. Also, there were number of studies investigated the possible effects of different types of CF on L2 learners' written and oral productions. As such, more research are needed to provide further insights particularly into the area of different types of CF on written production.

1.1. Types of Corrective-feedback

A number of studies have illustrated that CF can be provided to the learners in different forms, i.e., explicit correction, recasts, prompt, elicitation, clarification, repetition of error, and meta-linguistic feedback (Ding, 2012; Jeong, 2012; Lyster & Saito, 2010; Sheen & Ellis, 2011). However, CF in general is classified into implicit and explicit CF (Sato & Lyster, 2012). Explicit CF provides learners with target modals to the errors they made during their work; whereas, implicit CF does not provide the target model. Implicit CF is used in a way that it simply highlights the errors the learners made, allowing them to correct the errors themselves (Ellis, 2008; Sato & Lyster, 2012). Lightbown and Spada (1999) explain the various responses learners may receive to correct their erroneous. For example, when a language learner says, 'He write his homework every day', CF can be explicit, for instance, 'no, you should say writes, not write' or implicit 'yes he writes his homework every day', and may or may not include metalinguistic information, i.e., 'Don't forget to make the verb agree with the subject. Literature has argued that explicit and implicit CF both may assist L2 learners to improve the linguistic accuracy of their written productions (Bitchener, 2008; Bitchener & Knoch, 2010). Different types of CF have different effects on ESL/EFL learner writing (Ahmadi, Maftoon, & Mehrdad, 2012).

A number of studies reported that explicit CF is more effective in improving the linguistic accuracy of learners' written productions (Bitchener, 2008; Bitchener & Knoch, 2010; Kamberi, 2013; Lam, 2013; Nazari, 2013). For instance, Nazari (2013) found that providing explicit CF had positive effects on L2 learners' written productions. The findings of the studies by Bitchener (2008), Bitchener and Knoch (2010), and Falhasiri et al. (2011) correlated the findings by Nazari (2013). For example, Bitchener and Knoch (2010) investigated the different types of written CF and their impact on linguistic accuracy. The data was collected in three stages as a pretest, immediate posttest, and delayed posttest, and the learners were asked to describe different pictures in writing. Different types of CF were provided to measure the usage of definite and indefinite articles. Results found that all the treatment groups outperformed the control group in

the immediate posttest. However, during the delayed posttest, only the learners in meta-linguistic explanation and meta-linguistic explanation with oral instruction gained accuracy during the ten weeks period than implicit and control groups.

In contrary, a number of studies vigorously defended the effectiveness of implicit CF and provide evidence to support their claims. They believe that implicit CF could assist L2 learners to improve the linguistic accuracy of their language productions (Ahmadi, Maftoon, and Mehrdad, 2012; Clerckx, et al. 2010; Compillo, 2003; Marzban & Arabahmadi, 2013; Miceli, 2006). For instance, Ahmadi, et al. (2012) found that implicit CF significantly affected the linguistic accuracy of learners' written production over explicit CF. The study, which took place at Islamic Azad University; sixty EFL learners were placed in explicit CF, implicit CF, and no feedback groups. The data collected from pre and posttests showed significant difference between the groups, and suggested that learners participated in implicit CF group outperformed both over the explicit and control groups. The findings of the studies by Campillo (2003) and Zhao (2010) are similar to the findings by Ahmadi, Maftoon, and Mehrdad (2012). Moreover, Zhao (2010) claimed that implicit CF was more effective than explicit for two reasons as 1) it helped L2 learners improved the quality of their written text with understanding the significance or value of CF and 2) it also had positive effects on long-term writing proficiency of L2 learners' language production.

It still remains a question whether implicit or explicit CF is more effective in improving learners' language productions. As implicitness or explicitness can impact learners' perception which influences its effectiveness (Ding, 2012), two important factors should be considered in implementing CF; to know whether the learners should receive implicit or explicit CF or a combined form of the feedback (Mourssi, 2012). Yilmaz (2013) found that mixed CF (both implicit and explicit) was more effective in L2 classes. On the other hand, Ferries et al. (2013) claimed that providing different types of CF with no discussion and clarification was not effective. During the sixteen-week course, Ferries et al. (2013) collected four different under timed condition texts from ten participants. Then, each text was revised by the researchers, and they provided learners with feedback. After each revision, learners were required to participate in interviews and talk about the written CF provided to them. Results indicated that the learners were satisfied with the course outcomes while they asked for more clarification. Therefore, Ferries et al. (2013) reported that providing CF with no instructions and clarifications would not help L2 learners to write effectively. The studies reviewed above provided insights into positive effects of CF on learners' writing. However, the feedback on learners' written production was given in a traditional paper and pen form. It would be interesting to find out whether there are positive effects of CF on learners' writing when feedback is provided via web 2.0 technology which is wiki. The following section further discusses this.

▪ 1.2. Wiki-based feedback and its impact on learners' writing

Wiki is a freely expandable collection of interlinked web pages, a hypertext system for storing and modifying information, and a database where each page can easily be edited by any users (O'Neill, 2005). Wiki is a set of linked web pages that is shaped through an incremental development by a group of users (Wagner, 2004), an easy-to-use platform for collaborative work on texts and hypertexts (Ebersbach, Glaser, & Heigl, 2006), and is open accessed (Ruth & Houghton, 2009). In addition, Ben-zvi (2007) believed that the ease of procedure and communication made wiki a useful tool for group collaborative authoring, and it can be used to gain information from their teacher and other learners.

Researchers acknowledge that the use of wiki can have positive effects on learning process, and can be used as an effective collaborative tool for writing in language classes (Kovacis, Bubas, & Zaltovic, 2007; Parker & Chao, 2007; Ren & Gong, 2011; Wang et al. 2005; Zailin, Nik & Ainol, 2012). For instance, the study by Zailin, et al. (2012) found that the learners collaborated and participated equally via wiki. The study also showed that most of the learners, who used wiki in their classes, were able to write, rewrite and edit their group works anytime from anywhere. Moreover, the discussion that took place about writing, editing, feedback, and other interactions helped them in improving their written assignments. The Findings of the study by Zailin, Nik, and Ainol (2012) were supported by Biasutti and EL-Deghaidy (2012). They indicated that wiki offered collaborative, flexible, rich and empowered learning environments, and the learners were highly satisfied when they used wiki.

In addition to collaboration, some researchers also highlighted wiki as one of the best tools in teaching and assessing the overall learners' performance in language classes (Barry, 2012; Umar & Rathakrishnan, 2012; Zailin, 2010; Zailin, Nik, & Ainol, 2012). For example, Umar and Rathakrishnan (2012) pointed out that wiki did not only assist learners to improve their essay writing performance, it also improved their critical thinking skills. Findings of the study by Barry (2012) correlated with the findings of the study by Umar and Rathakrishnan (2012); the study assessed learners watching their presentations via wiki and revealed that watching the videos of learners' group presentation was an effective method of feedback and could improve group and individual performance.

Furthermore, Zailin (2010) asserted that wikis could also be used as an effective tool for teaching writing because revisions and feedback can easily be analyzed and addressed using this editable web-based tool. The researcher reported that during 10 weeks of study a total of 1553 of feedback were given via wiki. The revision made by the learners to their report writing has improved the text quality of their writing, and this was well acknowledged by the learners. The findings of the study by Zailin (2010) are recently echoed by Ng (2014). He investigated that wiki could assist learners to improve their writing by receiving comments from their peers and teachers. The study examined integrating assessment for learning as a practical pedagogy to improve the quality of their wiki-based project. 76 participants were enrolled at a teacher training

institute in Hong Kong. Results indicated a total of 451 comments were provided on wiki which showed the eagerness of learners condense their comments to peers. Participants of the study pointed out that teachers and peers comments helped them improve the quality of their wiki project.

The above descriptions on the effectiveness of wiki may well relate to the teaching and learning approaches the instructors or researchers have employed. Nevertheless, most of the studies sought to measure the impact of CF on linguistic accuracy of learners' written or oral productions in a traditional way i.e., paper and pen form. Also, as reviewed earlier, providing CF is one of the beneficial assistances instructors may offer the learners with, and it would be interesting to find out whether there are positive effects of CF on learners' written productions when feedback is provided via a 2.0 web. As such, the current study aims to fill the gap by investigating the possible effects of wiki-based implicit CF on L2 learners' written productions with reference to complexity, accuracy and fluency.

2. RESEARCH MATERIALS AND METHOD

The current study was conducted at one of the technical universities in Malaysia. It was designed to investigate the extent to which wiki-based implicit CF can help L2 learners improve the written productions in regards to complexity, accuracy, and fluency as evident in their writing via wiki. Nineteen ($n=19$) undergraduate learners doing English for Professional Communication course participated in the study. Their age ranged between 18-22 years and their L1 were either Malay, Chinese or Tamil. Their English proficiency was at a low level as evident from their Malaysian University English Test (MUET7) results in which majority of the learners achieved band two and a few achieved band three in the exam. Throughout the semester and when the study took place, the teaching and learning sessions were conducted in language labs. As such, learners were able to use computers with internet connection for classroom activities including assessing and writing on wiki. Three research questions were framed with the aim to investigate the following:

1: How does wiki-based implicit CF affect the complexity of L2 learners' written production?

2: How does wiki-based implicit CF affect the accuracy of L2 learners' written production?

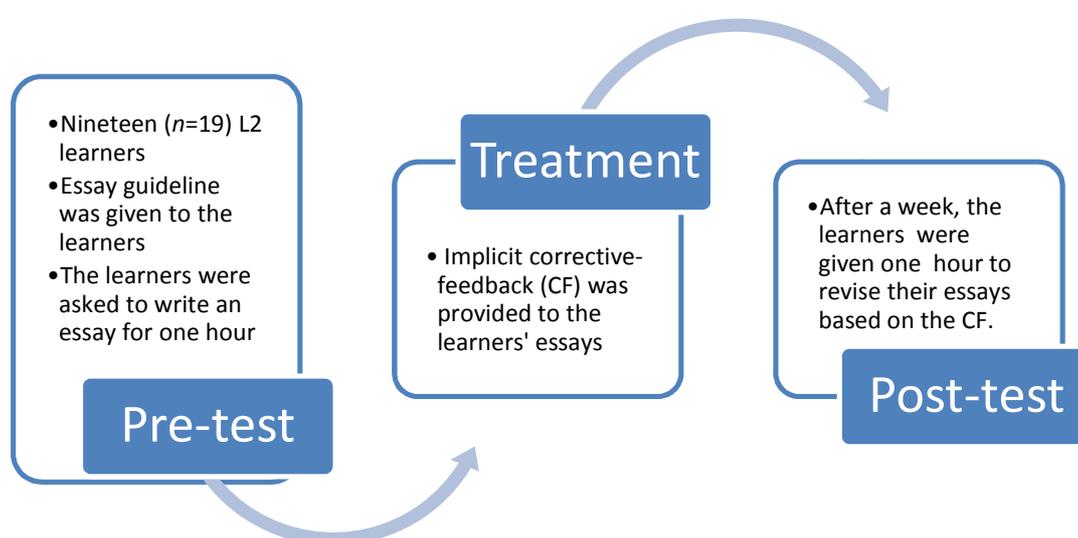
3: How does wiki-based implicit CF affect the fluency of L2 learners' written production?

⁷ Full description of MUET aggregated scores can be downloaded from <http://www.mpm.edu.my/web/guest/regulations-test-specifications-test-format-and-sample-questions>

2.1. Design

The data was collected in two stages as pre and posttests. During pretest, the learners were required to write an essay about communication at workplace for one hour. The topic was familiar to them as the course content was designed in such a way that it relates to communication at workplace. Next, the researcher provided implicit CF via wiki to the learners' essays. After a week interval, posttest was carried out whereby the learners, individually, were given one hour to revise their essays based on the implicit CF provided to them. Figure 1 illustrates the summary of the data collection processes:

Figure: 1 Procedure of data collection in the study



2.2. Data Analysis

Learners' written essays on communication at workplace from pre and posttest were analyzed to investigate: 1) if wiki-based implicit CF could help learners improved the complexity of their written production, 2) if wiki-based implicit CF could help learners improved the accuracy of their written production, and 3) if wiki-based implicit CF could help learners improved the fluency of their written production. C/T and DC/C ratios were analyzed to measure the syntactic complexity while Giraud index and sophisticated words ratios were used to measure the possible effects of wiki-based implicit CF on lexical complexity of learners' written productions. Accuracy was measured by total number of E/T and total numbers of E/C. In addition, total number of W/T and total number of W/C ratios were used to measure the fluency of learners' written production. The data was analyzed using Microsoft Excel and SPSS. The paired-samples t-test was administered to answer the research questions. It finds out about p value that shows significant difference between the pre and posttest of the study. Paired-samples t-test provides

the difference in two steps. First, if the p value is $p > 0.05$, it means there is no significant difference between the pre and posttest. However, if the p value is $p < 0.05$, it means there is a significant difference between the two pre and post-test results. To assure the reliability of wiki-based implicit CF and data analysis process, 25 percent of the whole data was coded. Clause and T-unit length was analyzed to observe the reliability of the CF as Mackey and Gass (2005) mention that at least 10 percent of the data should be coded to establish confidence in raters' reliability. The inter-rater reliability test was assessed through MedClac, and it showed strong agreement between the raters as $k = 0.86$.

Table 1: Measure of written productions: complexity, accuracy, fluency

Language Productions CAF (complexity, accuracy and fluency)							
Complexity				Accuracy		Fluency	
Syntactic Complexity	Lexical Complexity			E/T	E/C	W/T	W/C
C/T	DC/C	GI	%SW				

C= total number of clauses, T=total number of T-unit, DC= total number of dependent clause, GI= Giraud's index of lexical diversity by means of types/ tokens, SW= % of sophisticated words, E= total number of errors, W= total number of words

3. RESULTS

As indicated earlier, paired t-test was administered on four measures for complexity, two for accuracy, and two for fluency in order to answer the research questions, table 1 shows that implicit CF via wiki did not improve the syntactic complexity of L2 learners' written production as measured by C/T and DC/C. On the other hand, it was found that implicit CF provided to the learners assisted them to produce lexical complexity as evident in one of the measures, i.e. the GI of lexical complexity rather than SW ratio. Meanwhile, results indicated that learners yielded higher accuracy and fluency when they receive wiki-based implicit CF in the posttest as measured by E/T and E/C and W/T and W/C respectively.

3.1. Wiki-based Implicit Corrective-Feedback and Its Impact on Complexity

With respect to complexity, wiki-based implicit CF did not affect the syntactic complexity of learners' written productions. Table 2 reveals results from the two ratios C/T $t(19) = -.887$, $p > 0.05$ and DC/C $t(19) = -1.651$, $p > 0.05$ that shows no significant effects of implicit CF on syntactic complexity of learners' written productions. Regarding the lexical complexity, wiki-based implicit CF significantly affected the GI of learners' written productions as $t(19) = -11.744$, $p < 0.05$. Results showed that the mean score of learners' written production increased from $m = 8.6531$ in pretest to $m = 9.8344$ in posttest. Meanwhile, There were no effect of wiki-based implicit CF on SW ratio of lexical complexity as $t(19) = 2.084$, $p > 0.05$.

Table 2: Effects of wiki-based implicit CF on complexity of learners' written productions

Language Productions		Pre and posttests		
Measures			<i>df</i>	<i>P</i>
Syntactic Complexity	C/T	-0.887	19	0.387
	DC/C	-1.651	19	0.116
Lexical Complexity	GI	-11.744	19	0.000
	SW	2.084	19	0.052

Figures 2 and 3 represent the mean score of syntactic and lexical complexity of learners' written productions.

Figure 2: syntactic complexity of learners' written productions

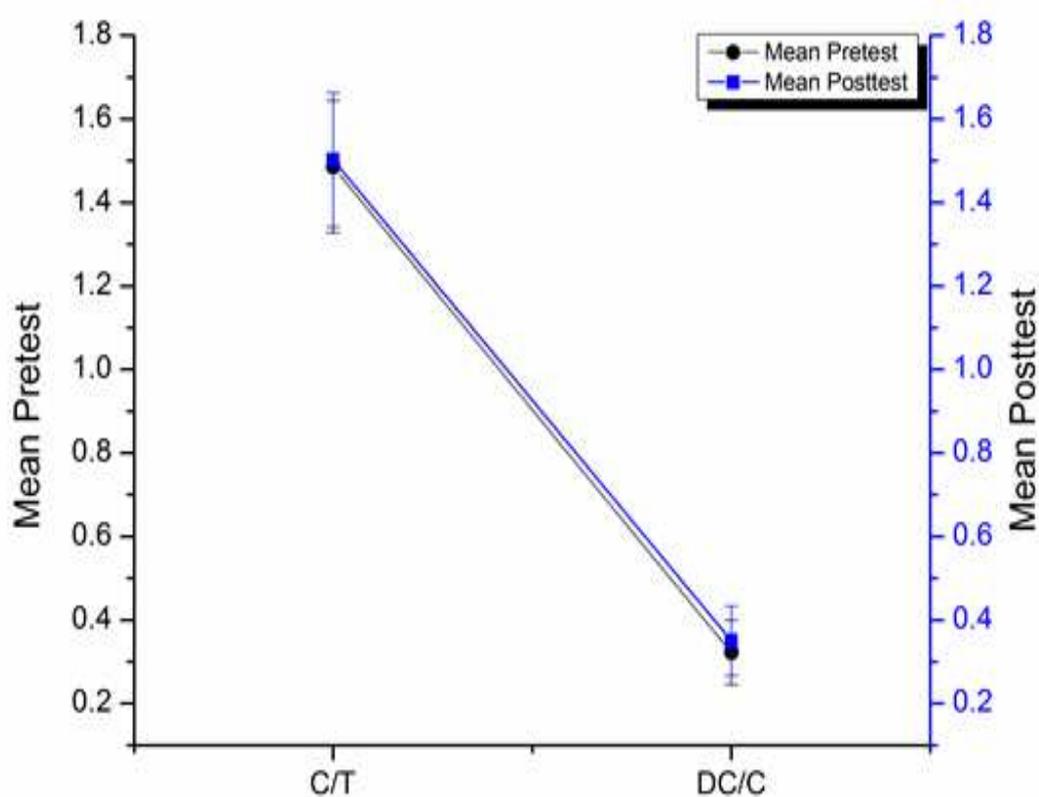
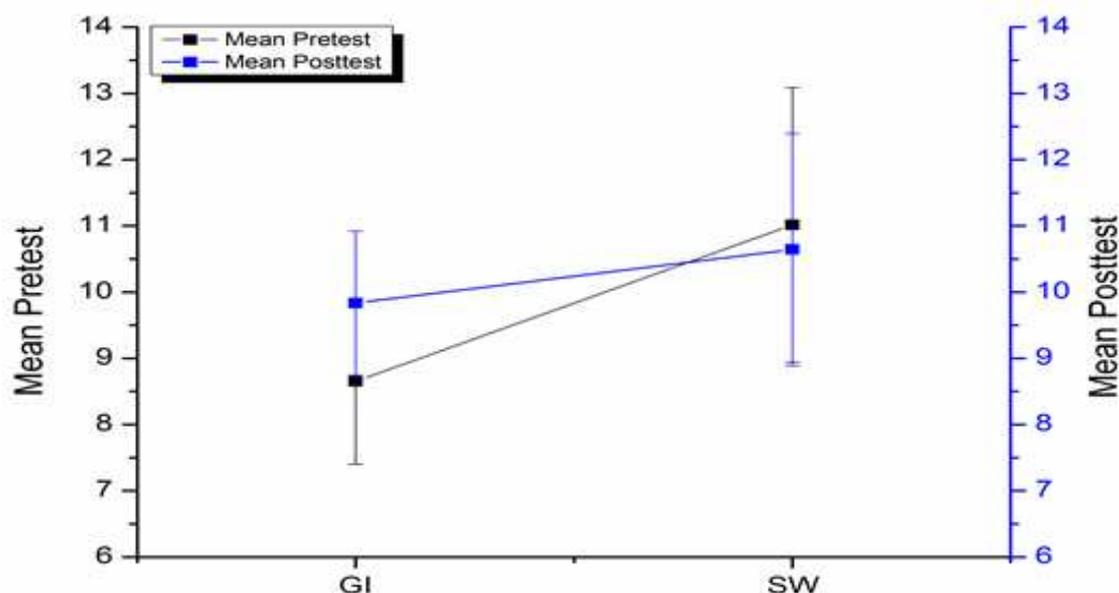


Figure 3: lexical complexity of learners' written productions



3.2. Wiki-based Implicit Corrective-Feedback and Its Impact on Accuracy

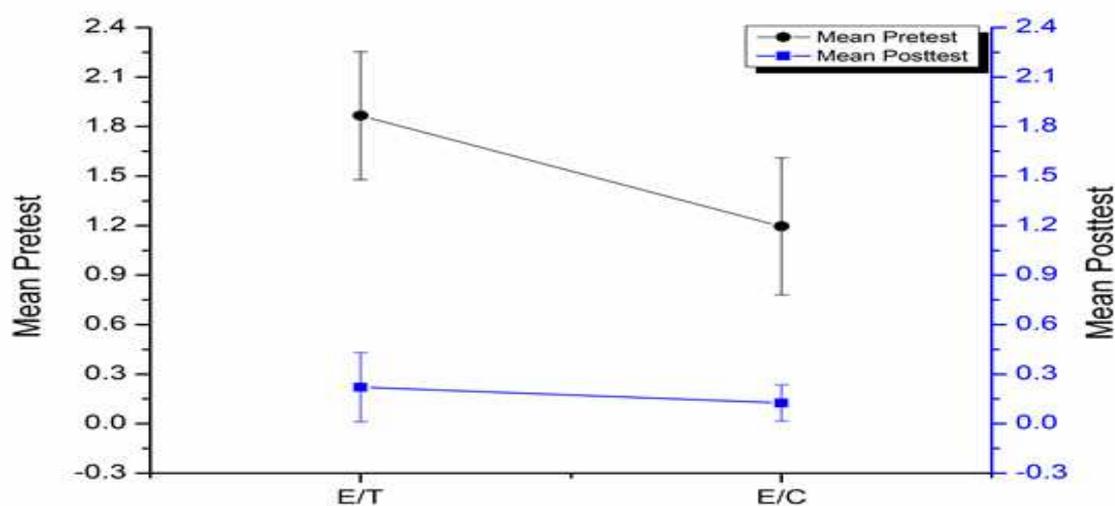
With respect to accuracy, results by means of paired-samples t test showed that implicit CF via affected the accuracy of L2 learners' written production as E/T and E/C were analyzed. Results indicated that after providing implicit CF via wiki, learners significantly produced more accurate language in posttest as evident in E/T $t(19)=17.367$, $p<0.05$ and E/C $t(19)=11.622$, $p<0.05$.

Table 3: Effects of wiki-based implicit CF on accuracy of learners' written productions

Language Productions		Pre and posttests		
Measures		T	df	P
Accuracy	E/T	17.367	19	0.000
	E/C	11.622	19	0.000

The mean score of E/T ratio reduced from $m=1.8659$ in pretest to $m=0.2204$ in posttest. Similarly, the mean score of E/C also decreased from $m=1.195$ in pretest to $m=0.1254$ in the posttest results. Figure 4 represents graph on the mean score of accuracy of learners' written productions.

Figure 4: accuracy of learners' written productions



3.3. Wiki-based Implicit Corrective-Feedback and Its Impact on Fluency

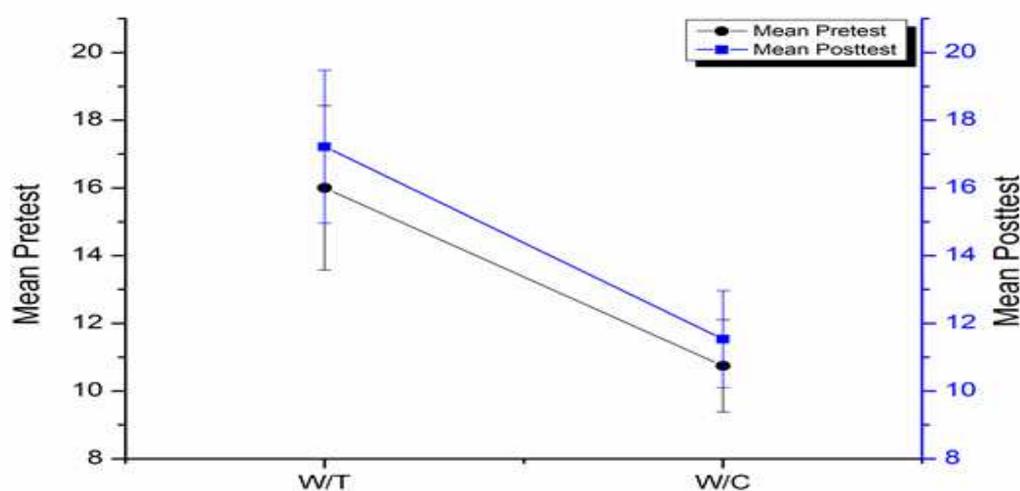
With respect to fluency, results by means of paired-samples t test showed that implicit CF via wiki significantly affected fluency of L2 learners' written production as E/T and E/C ratios were analyzed. Results indicated that after providing implicit CF via wiki, learners significantly produced more fluent language in posttest as evident in W/T $t(19) = -4.097$, $p < 0.05$ and W/C $t(19) = -4.399$, $p < 0.05$.

Table 4: Effects of wiki-based implicit CF on fluency of learners' written productions

Language Productions		Pre and posttests		
Measures		T	df	P
Fluency	W/T	-4.097	19	0.001
	W/C	-4.399	19	0.000

Figure 5 shows that the mean score for W/T ratio increased from $m=15.9988$ in pretest to $m=17.2194$. Likewise, there was also an incensement in the mean score of W/C ratio as it increased from $m=10.7407$ in pretest to $m=11.5339$ in posttest that shows a significant effects of wiki-based implicit CF on fluency of learners' written production. Figure 5 represents the mean score of fluency of learners' written productions.

Figure 5: fluency of learners' written productions



4. DISCUSSION

The aim of the current study was to investigate the effects of implicit CF on L2 learners' written productions in a wiki platform. For the purpose of the study, data in form of written essays on wiki by 19 L2 learners were collected and analyzed in terms of complexity, accuracy and fluency. Paired t-test was administered as the statistical analysis on four measures for complexity, two for accuracy and two for fluency. Overall, results of the analysis showed significant effects of wiki-based implicit CF on all measures of accuracy and fluency but only one measure for lexical complexity.

Total number of C/T and proportion of DC/C were analyzed to measure the syntactic complexity of learners' written productions as they are the main components in language development (Kuiken & Vedder, 2007). The findings of the current study revealed that wiki-based implicit CF did not help learners to improve the syntactic complexity of their written productions. This is in line with the findings by Marzban and Arabahmadi (2013) who did not find any significant effects of CF on the complexity of learners' written productions. However, results of the current study contradict the results by Fazilatfar, et al. (2014) and Meihami (2013). For instance, Fazilatfar et al. (2014) found that written CF assisted learners improved the syntactic complexity of their written productions. In addition to syntactic complexity, GI and SW ratios were analyzed to measure the lexical complexity. Results indicated that wiki-based implicit CF significantly affected the GI of learners' written productions. However, there was no significant effect of the implicit CF on SW ratio. Regarding GI, findings of the current study are similar to Fazilatfar et al. (2014). Complexity means writing more complex sentences and using the target language in a more advanced way (Wolfe-Quintero, et al. 1998). In the current study, the first reason that why CF did not assist learners to improve the complexity of their written works might be due to

their rather low level of proficiency in English language as evident from their Malaysian University English Test (MUET) results. Majority of the learners achieved band two or three in the exam. Lower proficiency learners tend to focus more on producing accurate than complex language (Farrokhi & Mahmoudi, 2012; Kuiken & Vedder, 2007).

Accuracy is important in academic or professional writing. It means the ability to be free from errors while using language to communicate in writing or speaking (Wolfe-Quintero, et al. 1998). Total numbers of E/T and total number of E/C were analyzed to measure the accuracy of learners' written production (Wolfe-Quintero, Inagaki, and Kim, 1998). Overall, results showed that wiki-based implicit CF significantly affected the accuracy of learners' written productions. The findings of the current study are in line with the finding by Ahmadi, Maftoon, and Mehrdad (2012); Bitchener and Knoch (2010), Ding (2012), Ferries at al. (2013), Lyster and Saito (2010), Marzban and Arabahmadi (2013), and Meihami (2013) that CF helped learners improved the linguistic accuracy of their written production. Additionally, Mackey and Goo (2007) and Zhao (2010) stated that implicit CF might be more vigorous (i.e. longer lasting) and effective.

Fluency is another language production measure employed in this study. Fluency is the capacity to communicate meaning in real time without any hesitation (Wolfe-Quintero, Inagaki, and Kim, 1998). The current study used the total number of W/T and total number of W/C to measure the fluency of learners' written production. Findings from pre and post-tests by means of paired t-test revealed that implicit CF significantly improved the fluency of learners' written production. Findings of the current study are similar to the findings by (Chandler, 2003) that after providing the CF learners significantly produced fluent language. However, the findings of the current study contradict the findings of the study by Marzban and Arabahmadi (2013) i.e. they found no significant effect of CF on fluency of learners' written productions.

5. CONCLUSION

The aim of the study was to find out the impact of wiki-based implicit CF on L2 learners' written productions. A pre and posttest design was used to collect data from learners. Overall findings of the study illustrated that wiki-based implicit CF significantly affected the accuracy, fluency and GI of the lexical complexity of learners' written productions. The findings of the study support the findings of the earlier empirical studies that CF helped learners improved their language productions particularly accuracy and fluency. Because only one measure of lexical complexity shows the significant effect, more studies should be carried out to provide more insights into this matter.

6. SUGGESTIONS OR RECOMMENDATIONS

The study conducted at University Malaysia Pahang (UMP) and used the learners who used Wiki technology in their English language classes; therefore, the findings maybe applicable to those

who are in similar learning context. It focuses only on wiki-based implicit CF and its effectiveness in learners writing; to determine the extent to which it may help them improve their writing. In addition, the learners in the current study were at a lower proficiency level. Therefore, further research may use advanced L2 learners as language proficiency can affect language development (Farrokhi & Mahmoudi, 2012; Kuiken and Vedder, 2007) while there is need for further research in this area.

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