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Language Teaching Research 2008; 12; 409
DOI: 10.1177/1362168808089924

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The value of written corrective feedback for migrant and international students

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This article provides an overview of research that has investigated the effectiveness of written corrective feedback (WCF) on ESL student writing. In doing so, it highlights a number of shortcomings in the design of some studies and explains what needs to be done in future research so that answers to the issues that have been raised can be effectively addressed. The article reports on a two-month study (with 144 international and migrant ESL students in Auckland, New Zealand) that investigated the extent to which different WCF options (direct corrective feedback, written and oral meta-linguistic explanation; direct corrective feedback and written meta-linguistic explanation; direct corrective feedback only; no corrective feedback) help students improve their accuracy in the use of two functional uses of the English article system (referential indefinite ‘a’ and referential definite ‘the’). The study found (1) that students who received all three WCF options outperformed those who did not receive WCF, (2) that their level of accuracy was retained over seven weeks and (3) that there was no difference in the extent to which migrant and international students improved the accuracy of their writing as a result of WCF.

Keywords: error correction, L2 acquisition through written response, written accuracy, written corrective feedback

I Introduction

It has long been assumed by teachers of a second or foreign language and by researchers working in the area of corrective feedback that WCF helps students to acquire and demonstrate mastery in the use of targeted linguistic forms and structures. As a result, they have been most concerned with discovering the most effective ways of providing WCF so that students improve the accuracy of their writing. However, Truscott’s 1996 paper, which claimed that WCF (error correction) is both ineffective and harmful, exposed the fact that there was no satisfactory research evidence to support the belief that WCF is effective in helping learners improve the accuracy of their writing over time. Although a number of counter claims were advanced (Ferris, 1999, 2003), pointing to a body of
research that suggests positive effects particularly with respect to text revisions, it was agreed by those on both sides of the argument (Ferris, 1999; Truscott, 1999) that the existing body of evidence was too limited in the range of studies that had been conducted (see pre-1996 studies referred to in this article) and in the quality of their design for any firm conclusions to be reached. Of the few well-designed studies that have been published, it would seem that students who receive WCF outperform those who do not. However, further evidence needs to be gathered before Truscott’s claim can be firmly rebutted.

This study was designed to further investigate (1) the efficacy of WCF over time, (2) whether certain WCF options typically used in L2 classrooms are more effective than others in helping learners improve the accuracy of targeted linguistic error categories and (3) the relative effectiveness of WCF for helping international and migrant students improve the accuracy of their writing. The study was conducted with 144 low-intermediate ESL students over a two-month period. The participants were classified as ESL students because they were studying in an English-speaking environment (Auckland, New Zealand). The international visa students (n = 75), primarily East Asian students who were used to receiving WCF and focusing on accuracy in their L2 classrooms, were studying English for various periods of time (generally 3–12 months) before returning to their home country. The migrant students (n = 69), from a wide range of L1 backgrounds, had settled in New Zealand as refugees, permanent residents or New Zealand citizens. This more heterogeneous group was less accustomed to formal classroom learning and therefore potentially less attuned to focusing on WCF. Assigned to three treatment groups and one control group (direct corrective feedback, written and oral meta-linguistic explanation; direct corrective feedback and written meta-linguistic explanation; direct corrective feedback only; no corrective feedback), the students produced three pieces of descriptive writing (pre-test, immediate post-test, and delayed post-test) about what was happening in a picture. Two functional uses of the English article system (referential indefinite ‘a’ and referential definite ‘the’) were targeted in the WCF.

II Background literature

This section is in three parts. Part One reviews the empirical studies that have investigated whether or not WCF is effective in helping learners improve the accuracy of their writing. Part Two surveys the literature on the relative effectiveness of different WCF options. Part Three presents an account of the claims and assumptions that have been made about the relative effectiveness of WCF for different learner populations.

I The effectiveness of WCF

A number of studies conclude that WCF is effective in helping ESL students improve the accuracy of their writing but many of these (Chandler, 2000; Ferris,
were designed without a control group so there is no way of knowing whether the improvements in accuracy were a result of only the WCF treatment. Seven studies, however, have compared groups of students who received WCF and those who did not (see Table 1). Five of these studies (Ashwell, 2000; Bitchener, 2008; Fathman & Whalley, 1990; Ferris & Roberts, 2001; Sheen, 2006) report that WCF had a positive effect on accuracy but, in the case of three, it can be seen from Table 1 that design limitations need to be taken into account when considering the overall value of the findings. For instance, each of these three studies (Ashwell, 2000; Fathman & Whalley, 1990; Ferris & Roberts, 2001) required that the students revise their texts rather than write new texts. The other two studies (Kepner, 1991; Polio, Fleck & Leder, 1998) that included a control group in their design report that WCF was not effective in helping students improve the accuracy of their writing. However, it needs to be realized that both of these studies contained design flaws and therefore must be read with this in mind.

Other studies (Chandler, 2000; Ferris, 1995, 1997, 2006; Ferris & Helt, 2000; Ferris et al., 2000; Lalande, 1982) that have not included a control group (see Table 2 below) are unable to claim that it was WCF alone that facilitated improvements in accuracy. At best, they can be read as indicative of the potential that WCF might have for helping learners improve the accuracy of their writing.

Overall, it can be seen that the currently available evidence is far from conclusive and that a body of well-designed studies is needed if this key issue is to be resolved.

2 The relative effectiveness of different WCF options

Some of the studies referred to in Table 2 above included more than one treatment option so rather than suggesting that their findings revealed evidence in support of WCF, they can be read as offering insights into the relative effectiveness of different types of WCF. Studies that have made these comparisons have most often categorized the feedback options as direct or indirect.

Direct corrective feedback may be defined as the provision of the correct linguistic form or structure by the teacher to the student above or near the linguistic error. It may include the crossing out of an unnecessary word/phrase/morpheme, the insertion of a missing word/phrase/morpheme, or the provision of the correct form or structure. Additional forms of direct feedback may include written meta-linguistic explanation (the provision of grammar rules and examples at the end of a student’s script with a reference back to places in the text where the error has occurred) and/or oral meta-linguistic explanation (a mini-lesson where the rules and examples are presented, practised and discussed; one-on-one individual conferences between teacher and student or conferences between teacher and small groups of students).
<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>WCF type</th>
<th>Duration</th>
<th>Effective</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fathman &amp; Whalley 1990</td>
<td>72 ESL learners (intermediate) USA college</td>
<td>(1) Indirect underlining (2) Content comment (3) Content comment &amp; indirect underlining (4) Control</td>
<td>A few days</td>
<td>Yes Groups 1 and 3 outperformed groups 2 and 4</td>
<td>(1) New texts not measured; text revision only (2) Not longitudinal (3) Focus on all errors</td>
</tr>
<tr>
<td>Kepner 1991</td>
<td>60 Spanish learners (intermediate) USA college</td>
<td>(1) Direct error correction (2) Control</td>
<td>1 semester</td>
<td>No</td>
<td>(1) No pre-test measurement (2) No control over journal entry length (3) No control over texts written out-of-class (4) Analytical flaws</td>
</tr>
<tr>
<td>Polio, Fleck &amp; Leder 1998</td>
<td>65 ESL learners USA university</td>
<td>(1) Error correction; editing instruction; text revision (2) Control</td>
<td>7 weeks</td>
<td>No</td>
<td>(1) Different instruments in post-test (journal entry vs in-class essay)</td>
</tr>
<tr>
<td>Ashwell 2000</td>
<td>50 EFL learners Japan university</td>
<td>(1) Content comment then indirect underlining &amp; coding (2) Indirect underlining &amp; coding then content comment (3) Mix of (1) &amp; (2) (4) Control</td>
<td>1 semester</td>
<td>Yes Accuracy gains for groups 1–3 in draft 3</td>
<td>(1) New texts not measured; text revision only (2) Effect of intervening variables possible</td>
</tr>
<tr>
<td>Ferris &amp; Roberts 2001</td>
<td>72 ESL learners USA college</td>
<td>(1) Indirect underlining &amp; coding (2) Indirect underlining (3) Control</td>
<td>1 semester</td>
<td>Yes Groups 1 and 2 outperformed group 3</td>
<td>(1) New texts not measured; text revision only</td>
</tr>
<tr>
<td>Study</td>
<td>Total Learners</td>
<td>Learner Level</td>
<td>Context</td>
<td>Interventions</td>
<td>Duration</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
<td>--------------</td>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Bitchener 2008</td>
<td>75</td>
<td>(low intermediate)</td>
<td>New Zealand language schools</td>
<td>(1) Direct error correction; written &amp; oral meta-linguistic explanation (2) Direct error correction; written meta-linguistic explanation (3) Control</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Sheen 2006</td>
<td>177</td>
<td>(intermediate)</td>
<td>US community college</td>
<td>(1) Written direct correction (2) Written direct meta-linguistic explanation (3) Control</td>
<td>8 weeks</td>
</tr>
</tbody>
</table>
On the other hand, **indirect** corrective feedback is that which indicates that in some way an error has been made. This may be provided in one of four ways: underlining or circling the error; recording in the margin the number of errors in a given line; or using a code to show where the error has occurred and what type of error it is (Ferris & Roberts, 2001; Robb, Ross & Shortreed, 1986). Rather than the teacher providing an explicit correction, students are left to resolve and correct the problem that has been drawn to their attention.

The question therefore arises as to which type is more beneficial for accuracy improvement. Over the years, arguments have been advanced for both approaches. Those supporting indirect feedback suggest that this approach is best because it requires students to engage in guided learning and problem-solving.
solving and, as a result, promotes the type of reflection that is more likely to foster long-term acquisition. Those more in favour of direct feedback suggest that it is more helpful to students because it (1) reduces the type of confusion that they may experience when they fail to understand or remember, for example, the meaning of error codes used by teachers, (2) provides them with sufficient information to resolve more complex errors in, for example, syntactic structure and idiomatic usage, and (3) offers more immediate feedback on hypotheses that may have been made. Studies that have investigated the relative merits of these approaches can be grouped according to those that have compared direct and indirect types of WCF, those that have compared different types of indirect feedback, and those that have compared different types of direct feedback.

From Table 3 below, it can be seen that two studies (Lalande, 1982; Ferris & Helt, 2000) report an advantage for indirect feedback, two (Robb, Ross & Shortreed, 1986; Semke, 1984) report no difference between the two approaches, and one (Chandler, 2003) reports positive findings for direct feedback. Given these conflicting results, further evidence is required before any firm conclusions can be reached.

In addition to these direct-indirect comparisons, several other studies (Ferris & Roberts, 2001; Ferris et al., 2000; Robb et al., 1986) have investigated the relative effectiveness of different types of indirect feedback (coded and uncoded). None found any difference between the two options. Even less attention has been given to a comparison of different direct feedback options. Bitchener, Young and Cameron (2005) compared the effect of three typical L2 classroom options: (1) direct correction plus written and oral meta-linguistic explanation, (2) direct correction plus written meta-linguistic explanation and (3) direct correction only. They found that group one outperformed the other two groups, indicating therefore that the addition of oral meta-linguistic explanation may be the crucial factor in facilitating error reduction. This is a very limited body of evidence so further research into the effectiveness of each of these feedback categories is required if firm conclusions are to be reached.

In the meantime, it is interesting to note that several oral corrective feedback studies in SLA research (Carroll & Swain, 1993; Ellis, 1998; Ellis, Loewen & Erlam, 2006) have found a significant advantage for direct feedback over indirect feedback. Ellis et al. (2006), for example, investigated the effect of two types of corrective feedback on the acquisition of past tense –ed by low-intermediate ESL students in Auckland, New Zealand. One group received implicit corrective feedback in the form of recasts, a second group received explicit corrective feedback in the form of meta-linguistic explanation, and a third group, acting as a control group, received no corrective feedback. Two post-test scores revealed a clear advantage for students who received explicit corrective feedback.
Another variable in the WCF literature that has been identified but under-explored for the potential it might have in determining the effectiveness of WCF is subject/participant classification (Ferris, 2003, 2004). Hedgcock and Lefkowitz (1994) have suggested that a distinction can be made between second language (SL) and foreign language (FL) writers because of differences in the purposes for which they are writing and in the pedagogical contexts in which they have acquired their first and second language literacy. They

### Table 3 Studies comparing the effectiveness of direct & indirect WCF

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>WCF types</th>
<th>Duration</th>
<th>Most effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lalande 1982</td>
<td>60 German FL learners (intermediate)</td>
<td>(1) Direct error correction</td>
<td>10 weeks</td>
<td>Indirect</td>
</tr>
<tr>
<td></td>
<td>USA university</td>
<td>(2) Indirect coding &amp; error logs kept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semke 1984</td>
<td>141 German learners USA university</td>
<td>(1) Comments</td>
<td>10 weeks</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Direct corrections</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Direct corrections &amp; comments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Indirect (coded) corrections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robb, Ross &amp; Shortreed 1986</td>
<td>134 EFL learners Japan college</td>
<td>(1) Direct corrections</td>
<td>1 year (34.5 contact hours)</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Indirect coded feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Indirect highlighted feedback (no codes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Indirect marginal feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferris &amp; Helt 2000</td>
<td>92 ESL learners USA university</td>
<td>Mix of direct, indirect (coded &amp; uncoded); notes (marginal &amp; end-of-text); text revision</td>
<td>1 semester</td>
<td>Indirect</td>
</tr>
<tr>
<td>Chandler 2003</td>
<td>31 ESL learners Hong Kong</td>
<td>(1) Direct &amp; indirect underlining</td>
<td>1 semester</td>
<td>Direct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Error description &amp; indirect underlining</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 The relative effectiveness of WCF for migrant and international students

Another variable in the WCF literature that has been identified but under-explored for the potential it might have in determining the effectiveness of WCF is subject/participant classification (Ferris, 2003, 2004). Hedgcock and Lefkowitz (1994) have suggested that a distinction can be made between second language (SL) and foreign language (FL) writers because of differences in the purposes for which they are writing and in the pedagogical contexts in which they have acquired their first and second language literacy. They
posit the view that FL writers may be less motivated than SL writers to attend to WCF because they are studying to meet a qualification requirement rather than studying to improve the accuracy and clarity of their English so that they can become fully active members of an English-speaking community. Additionally, they suggest that a third group – English as a foreign language (EFL) students – who study English in non-English speaking countries may have varying degrees of motivation when it comes to the level of attention they give to WCF.

The educational background of learners has also been identified as a subject variable that might have an effect on the extent to which some students benefit from WCF (Hedgcock & Lefkowitz, 1994). They suggest that if students have received summative feedback (as a result of product-oriented instruction where feedback is provided in order to justify a grade rather than to help them revise their texts and focus on improving accuracy in new pieces of writing) as opposed to formative feedback (as a result of process-oriented instruction where feedback is provided with the opposite intention), they may not be highly motivated to attend to WCF.

A second background factor that has been identified for the potential it might have is the level of exposure the student has had to formal and acquired knowledge of the target language (Ferris, 1999; Reid, 1998, 2005; Roberts, 1999). It has been suggested that international (visa) students, who are likely to have studied the target language in an EFL context, may have a strong explicit knowledge of terms and rules of English grammar but less of an acquired awareness of how to apply such knowledge to their own writing. On the other hand, it has been suggested that immigrant students (who it is assumed have not been exposed to formal instruction in the target language but who have picked up the language through participation in informal, conversational contexts) may rely on their acquired knowledge of the language to self-correct their writing but have limited or maybe no awareness of how to reference the formal system of grammar elicited by WCF.

Until these claims and assumptions have been empirically tested in a range of contexts, they remain little more than conjecture. In light of the paucity of reliable evidence, the following study was designed to help address this need.

III The study

1 Aims

Three aims informed the design of this study. The first was to add to the growing body of research investigating the extent to which targeted corrective feedback on ESL student writing results in improved accuracy in new pieces of writing over time. The second aim was to investigate whether there is a differential effect on accuracy for different WCF options. The third aim was to determine whether there are differences in the extent to which migrant and
international students benefit from WCF. Three research questions were therefore framed to investigate these aims:

1. Does accuracy in the use of two functions of the English article system vary over time as a result of WCF?
2. Does accuracy in the use of these features vary according to the WCF options provided?
3. Are there differences in the extent to which the accuracy levels of migrant and international students improve as a result of WCF?

2 Design

Accuracy in the using two functions of the English article system was measured over a period of two months by means of a pre-, post- and delayed-post-test design. Four groups (three treatment and one control) of low-intermediate ESL students took part in the study: group one received direct corrective feedback above each targeted error as well as written and oral meta-linguistic explanation; group two received direct corrective feedback above each targeted error and written meta-linguistic explanation; group three received direct corrective feedback above each targeted error; group four did not receive corrective feedback.

3 Participants

The study was conducted at two private language schools and in the English Language Department of a university in Auckland, New Zealand. Four intact low intermediate classes of students from each of the three institutions (n=144) were invited to participate. Each institution followed the same process when assigning students to classes: a standardized grammar test, a writing test and a one-on-one interview for students new to the institution and either an achievement test for students who had moved from one proficiency level to another (at the two private language schools) or a group of competency-based assessments (at the university English language department). The institutions describe their approach to the teaching of English as communicative and they give an equal focus to reading, writing, speaking and listening. Students (n=75) from the two private language schools were international visa students, studying English in New Zealand for a specified time. None had been in New Zealand for more than six months. Students (n=69) from the university English Language Department were migrants who had settled in New Zealand within an 18-month period.

Students in the two private language schools receive between three and five hours of English language instruction five days a week depending on whether they are enrolled as full-time or part-time students. Students in the university English Language Department receive between two and four hours
of instruction five days a week. Except for three students from one of the private language schools, all students in this study were studying full-time. Thus, the international students from the private language schools received 25 hours of instruction per week and the migrant students from the university department received 20 hours.

The international students (33 males and 42 females) were predominantly from East Asian countries: Korea (27%), Japan (26%), P.R. China 10%), and others (3–7%) from countries such as Taiwan, Thailand, Vietnam, Russia, Switzerland, Saudi Arabia, Chile and Brazil. The migrant students (21 males and 48 females) were from a wide range of backgrounds: P.R. China (26%), Taiwan (9%), Korea (7%), Indonesia (3%), Japan (6%), India (5%), Russia (6%), Serbia (8%), Turkey (5%), Somalia (5%), Romania (6%), Iran (6%), Sri Lanka (6%).

The average age of the international students was 22.7 years whereas that of the migrant students was 34.1 years.

The majority of the international students (88%) had received formal classroom instruction in the English language over an average of 8 years. However, a smaller proportion of the migrant students (53%) claimed to have had formal instruction at the private language schools and the duration of their study varied across a 7-year period.

The four classes at each institution were randomly assigned to one of the four treatment groups. In total, group one comprised 34 students, group two 36 students, group three 35 students and group four 39 students.

4 Target structures

Compared with earlier studies of the effect of written corrective feedback on ESL student writing (see Ferris, 2002, 2003, 2006), where sometimes as many as 15 linguistic forms and structures had been examined, this study investigated the effect of targeting only two potentially ‘treatable’ (Ferris, 2002, 2003; Truscott, 1996) error categories.

Two functional uses of the English article system were chosen as the target structures: the referential indefinite article ‘a’ for referring to something the first time (first mention) and the referential definite article ‘the’ for referring to something that has been mentioned before (subsequent mention). Other functional uses of the definite and indefinite articles were not targeted in the study.

These structures were targeted because students across English language proficiency levels experience difficulty in the use of the English article system (Bitchener, Young, & Cameron, 2005; Butler, 2002; Ferris, 2002, 2006; Master, 1995). For example, they may experience difficulty deciding whether an article is required and, if it is, whether it should be the definite or indefinite article. Accuracy in the use of these functions in the pre-test revealed a mean score of 59.63%, thereby indicating a partial mastery of the functions.
5 Treatment

The treatment (different WCF options on two functional uses of the English article system) varied according to the group/class in which the students were enrolled. Groups one, two and three received WCF on their errors but group four did not receive WCF because it was the control group.

Group one received direct error correction above each targeted error category as well as written and oral meta-linguistic explanation. The written meta-linguistic explanation included a simple explanation of the two targeted functional uses of the definite and indefinite articles together with an example of their use. Attached to their pre-test pieces of writing, the students received the following explanation and illustration:

1. Use ‘a’ when referring to something for the first time
2. Use ‘the’ when referring to something that has already been mentioned.

Example
A man and a woman were sitting opposite me. The man was British but I think the woman was Australian.

Oral meta-linguistic explanation took the form of a 30-minute mini-lesson. During this lesson, the researcher explained the rules and example that the students had received on their returned texts. Additional examples were illustrated on the whiteboard and discussed with the class. The students were then given a short ‘controlled practice’ exercise (see Appendix A) and asked to fill the gap in each sentence with ‘a’ or ‘the’. The students were given 5 minutes to complete the exercise. The lesson concluded with a plenary discussion of the answers.

Group two received direct error correction above each targeted error category and written meta-linguistic explanation. Group three only received direct error correction above each targeted error category. Group four did not receive corrective feedback.

The written and oral meta-linguistic feedback was only provided in the treatment session that took place a week after the pre-test and on the same day as the immediate post-test. The immediate post-test texts were returned to the students within a week. A tick was placed above correct uses of the targeted features and a cross above incorrect uses. No direct feedback was provided on the two post-test texts.

6 Instruments

Each of the three tests required students to describe what was happening in a given picture. Picture one for the pre-test was about a beach scene while picture two for the immediate post-test was about a picnic scene and picture three for the delayed post-test was about a camping scene. Picture descriptions were chosen because the range of people, objects and activities illustrated in
the pictures would create obligatory opportunities for the use of the English article system. Although it was acknowledged that they would be able to avoid such uses if they were uncertain about which use was appropriate and choose other determiners such as ‘one’, ‘two’, ‘this’, ‘that’, it was believed that this would not happen or be possible in all linguistic environments. Across the three writing tasks, no student made fewer than six uses of ‘a’ and ‘the’.

Because the students were at a low-intermediate level of proficiency, some of the key vocabulary items (concrete nouns) were provided around the margins of each task with arrows pointing to the relevant person, object or activity. It was decided that this would lower the anxiety level for the students if unknown words were provided. Additionally, they were allowed to use dictionaries and ask the researcher for a particular word if necessary. The students were given 30 minutes to complete their writing on each occasion.

7 Procedure

One week prior to the pre-test, and in accordance with the requirements of the university’s Ethics Committee (AUTEC), the students and the teachers (in separate sessions) in the four classes at each institution were provided with information sheets about the study and were given the opportunity to ask questions before signing a participant consent form.

Because of the amount of marking required for each class, the data collection took place at different times during the year. On day one, the pre-test was administered. One week later, the treatment (WCF) was provided. This involved the researcher returning to each of the classes and, for groups one, two and three, returning the students’ writing and asking them to look at the feedback (groups one and two received direct corrective feedback and written meta-linguistic explanation; group three received only direct corrective feedback). For group one, this was followed up with the 30-minute lesson (oral meta-linguistic explanation). Immediately after the lesson, the students in group one were asked to do a second piece of writing (immediate post-test). For groups two and three, after looking over their feedback, they were asked to do their second piece of writing. For group four, the second writing task took place as soon as the pre-test writing had been returned.

The second piece of writing for all groups was returned within a week after it had been written. On the texts of groups one, two and three, ticks were placed above correct uses of the targeted features and crosses above incorrect uses. Direct WCF was not provided. No feedback was given to group 4.

The delayed post-test was administered seven weeks later. The students were not told when the researcher would be returning to the class. The reason for this was to eliminate the possibility of any student studying the feedback that they had earlier been given. The researcher did not want the students to be primed in any way beforehand. The third piece of writing was returned to the students one week later.
8 Analysis

On photocopies of the students’ texts, obligatory uses of the targeted features were identified and marked according to whether they were correct or incorrect. Accuracy on each occasion was calculated as a percentage of correct usage for each script given the range of obligatory occasions. For example, in any one script, three correct uses of the targeted features from 10 obligatory occasions meant a 30% accuracy rate. Inter-rater reliability calculations with a trained research colleague revealed a 95% agreement on the identification of targeted errors and a 98% agreement on the assignment of errors to the targeted categories. Descriptive statistics for the four groups on the pre-test, immediate post-test and delayed post-test were calculated first for the whole sample of students and then for the international students and the migrant students separately. Tests of statistical significance were calculated by means of a mixed-design ANOVA because no statistically significant differences on pre-test scores were found.

IV Results

Descriptive statistics for research questions 1 and 2 are presented in Table 4 and illustrated in Figure 1.

RQ 1: Does accuracy in the use of two functions of the English article system vary over time as a result of WCF?

The ANOVA revealed a significant difference across the three writing tests, $F(2, 143) = 91.065, p = .000$. The pairwise comparison showed that the statistically significant differences are located between the pre-test and the immediate post-test ($p = .000$) but not between the immediate post-test and the delayed post-test ($p = .342$). The difference between pre-test and immediate post-test resulted from the large increase in accuracy of the three treatment groups, whilst between the immediate post-test and the delayed post-test the changes in accuracy for all groups were negligible and not statistically significant. The control group made no significant changes in terms of accuracy across the three tests.

RQ 2: Does accuracy in the use of these features vary according to the WCF options provided?

Descriptive statistics revealing the mean accuracy scores for the different WCF options are presented in Table 4 and illustrated in Figure 1 above. The Analysis of Variance revealed a significant effect for feedback option, $F(3, 143) = 7.515, p = .000$. The pairwise post hoc comparison showed that, in this case, the control group was statistically significantly different from all the other groups ($p < .002$). None of the other three groups differed from each other.
In addition to these findings, the ANOVA revealed an interaction effect between the feedback option and time, $F(3,143) = 6.429$, $p = .000$. This interaction effect occurred, because all treatment groups reduced in accuracy in the delayed post-test whilst the control group’s accuracy increased. However, none of these differences was statistically significant.

**RQ 3: Are there differences in the extent to which the accuracy levels of migrant and international students improve as a result of WCF?**

Descriptive statistics revealing the mean accuracy scores for the international students only and the migrant students only are presented in Tables 5 and 6 and illustrated in Figures 2 and 3.
The ANOVA revealed that there was no effect for group, $F(1,143) = .344$, $p = .558$. This means that there was no difference in the extent to which the accuracy of the international and migrant students was affected by WCF. There was, however, an interaction effect between time and group, $F(2, 143) = 4.125$, $p = .020$. This effect was created because of a difference in the behaviour of the control groups in the delayed post-test of the two groups of students. International students in the control group performed better in the delayed post-test than in the immediate post-test, whilst the opposite was true for migrant students in the control group. No interaction effect was observed between feedback option and student group, $F(3, 143) = 1.011$, $p = .390$. This means that both international and migrant students reacted in the same way to the WCF provided.

Table 5  Descriptive statistics (international students only)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Immediate post-test</th>
<th>Delayed post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>CF, written, oral</td>
<td>17</td>
<td>67.59</td>
<td>19.26</td>
</tr>
<tr>
<td>CF, written</td>
<td>18</td>
<td>53.11</td>
<td>21.73</td>
</tr>
<tr>
<td>CF</td>
<td>20</td>
<td>59.35</td>
<td>18.39</td>
</tr>
<tr>
<td>Control</td>
<td>20</td>
<td>51.90</td>
<td>28.32</td>
</tr>
</tbody>
</table>

Figure 2  Accuracy of international students across the three tests

The ANOVA revealed that there was no effect for group, $F(1,143) = .344$, $p = .558$. This means that there was no difference in the extent to which the accuracy of the international and migrant students was affected by WCF. There was, however, an interaction effect between time and group, $F(2, 143) = 4.125$, $p = .020$. This effect was created because of a difference in the behaviour of the control groups in the delayed post-test of the two groups of students. International students in the control group performed better in the delayed post-test than in the immediate post-test, whilst the opposite was true for migrant students in the control group. No interaction effect was observed between feedback option and student group, $F(3, 143) = 1.011$, $p = .390$. This means that both international and migrant students reacted in the same way to the WCF provided.
Table 6  Descriptive statistics (migrant students only)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF, written, oral</td>
<td>17</td>
<td>59.35</td>
<td>10.97</td>
<td>83.35</td>
<td>18.42</td>
<td>79.18</td>
<td>9.61</td>
</tr>
<tr>
<td>CF, written</td>
<td>18</td>
<td>61.06</td>
<td>19.94</td>
<td>83.50</td>
<td>16.67</td>
<td>75.78</td>
<td>11.38</td>
</tr>
<tr>
<td>CF</td>
<td>15</td>
<td>59.93</td>
<td>19.43</td>
<td>76.80</td>
<td>13.51</td>
<td>78.07</td>
<td>14.30</td>
</tr>
<tr>
<td>Control</td>
<td>19</td>
<td>65.16</td>
<td>17.01</td>
<td>66.32</td>
<td>19.94</td>
<td>59.11</td>
<td>21.21</td>
</tr>
</tbody>
</table>

V Discussion

The study found that students who received WCF significantly improved their accuracy in using the targeted functions of the English article system and that they retained this level of accuracy when writing a new text seven weeks after the treatment session and the immediate post-test. These findings corroborate those of several earlier studies (Ashwell, 2000; Bitchener, 2008; Bitchener et al., 2005; Fathman & Whalley, 1990; Ferris & Roberts, 2001, Sheen, 2006) and therefore provide further evidence for a rebuttal of Truscott’s (1996) claim that error correction is ineffective. They show that a single WCF treatment is effective in helping learners improve the accuracy of their writing and that the benefits accrued from this input are not only retained over time but also evident in new pieces of writing. Because this study reports on the findings of
only one delayed post-test, further research is now required to determine whether learners are able to maintain this level of accuracy over a more extensive period. It can be seen from Figure 1 that there was a minor regression in level of accuracy by two of the treatment groups in the delayed post-test. While this movement was not statistically significant, it would be interesting to observe in more extensive investigations (where additional post-tests are included) whether any decline is significant. Further research is also needed to measure the extent to which WCF is effective in bringing about similar gains in accuracy when other linguistic categories are targeted. The findings of this study are additionally important because they have been tested with a larger population than most earlier studies (see Table 1) and because they are the product of a study that sought to eliminate the limitations of earlier research.

Although there were small differences in the means of the three treatment groups, the study found that none of the feedback options was any more effective than another. For several reasons, these findings are not particularly surprising given the growing evidence that has been reported in several recent written and oral CF studies (Bitchener, 2008; Bitchener et al., 2005; Ellis et al., 2006; Sheen, 2006). While one of these studies (Bitchener, 2007) found no difference between one of the direct treatment options (direct corrective feedback with written meta-linguistic explanation) and the control group, the other three studies found that learners who were exposed to all of the direct feedback options outperformed those who did not receive such feedback. It would seem therefore that teachers may be able to achieve the same results with their students if they simply offer error correction without written and/or oral meta-linguistic explanation when responding to linguistic categories that have been partially acquired. Further research is needed to discover whether this is sufficient for categories that are new to students or are more complex. Future research would also do well to separate and measure the effectiveness of direct WCF, written meta-linguistic explanation and oral meta-linguistic explanation as separate variables.

The study revealed that the international students were no more able than the migrant students (and vice versa) to improve the accuracy of their writing as a result of the WCF they received. This is an interesting finding because earlier suggestions (Ferris, 1999; Hedgcock & Lefkowitz, 1994; Reid, 1998, 2005; Roberts, 1999) have tended to identify international visa students as being potentially more attuned to focusing on grammatical accuracy than migrant students. It is a popularly held view that migrant students may have a stronger desire to focus on general communicative competence so that they can become active members of their new English-speaking environment and that they may have had less formal instruction in the target language and therefore be less able or inclined to focus their attention on explicit grammatical knowledge. However, as the results of this study reveal, this was not the case. One reason for this might be that neither of the two groups comprised students
exclusively from one of these backgrounds. In other words, there may have been an overlap in the membership of the two groups. Migrant students may or may not have had formal instruction in the target language. International visa students may or may not have had opportunities to study the target language in an English-speaking environment (for example, during term holidays). Future research may be able to categorize its subjects more strictly and determine whether those exclusively from one background are more able than those from another to improve upon the accuracy of their writing once they have received WCF. Even if a difference is found, it may not be able to be applied if typical classroom groupings contain students from a wide range of backgrounds.

Two reasons might explain the poorer performance of the migrant students in the delayed post-test. First, they may have given less attention to accuracy in the third piece of writing because their background had not attuned them to such a focus and because the absence of a focus on accuracy for seven weeks may have led them to focus more on message meaning. Second, age may have been an intervening factor. The average age of the migrant students was 34.1 years whereas that of the international students was 22.7 years. It may not have been as easy for the migrant students to remember what they had initially learned from the WCF. Because the overall findings did not reveal a difference in the effect of WCF on the two groups of students, it would seem that international and migrant student errors may be able to be responded to with the same WCF options. For classroom teachers with students from diverse backgrounds, this would be welcome news.

VI Conclusion

This study was designed to investigate (1) the extent to which targeted WCF on ESL student writing results in improved accuracy in new pieces of writing over time, (2) whether there is a differential effect on accuracy for different WCF options, and (3) to determine whether there are differences in the extent to which migrant and international students improve the accuracy of their writing as a result of WCF. With respect to the first aim, it was found on the immediate post-test that WCF had a significant effect in helping students improve their accuracy in using two functional uses of the English article system (the referential indefinite article ‘a’ for first mention and the referential definite article ‘the’ for subsequent mentions) and that this level of accuracy was retained when measured seven weeks later in the delayed post-test. Concerning the second aim, the study found that students who received the three different WCF options outperformed those who did not receive WCF but that there was no significant difference in performance between those in the three treatment groups. As far as the third aim was concerned, there was no difference in the extent to which migrant and international students benefited from WCF.
Each of these findings is important insofar as it either corroborates the findings of existing research or reveals insights into areas that have been under-explored in the literature. The findings of this study corroborate a growing body of research that has recently shown that WCF on targeted error categories (as opposed to the provision of no WCF) enables ESL students to improve the accuracy of such usage in new pieces of writing. A unique feature of this study is its larger sample size (144 students as opposed to smaller samples referred to in earlier studies). Although this study found no difference in effectiveness between the different direct WCF options, further research is required to determine whether this can be regarded as a stable conclusion. On the one hand, Bitchener (2007) reported a difference in effectiveness between direct WCF options. On the other hand, the effectiveness of separated direct WCF types has been under-investigated. Another unique feature of this study was its investigation into the relative effectiveness of written corrective feedback for migrant and international students. In this respect, the study revealed no difference between the two groups but exposed the need for further investigations into more tightly categorized groups of migrant and international students. Researchers who have access to large numbers of students may be able to group their students in this way and see if differences in responsiveness emerge. However, the ultimate value of doing this may be outweighed by the reality of more heterogeneous classroom populations.

While the findings of this study offer positive support for the practice of WCF, it needs to be realized that they provide evidence from a certain population and context and in the use of two targeted features. Further research is required to investigate the extent to which these findings might apply to students from other proficiency levels and other migrant/international backgrounds when they receive other forms of direct and indirect WCF on other problematic error categories.

VII References


Appendix A: Controlled practice exercise

Fill in the gaps with a, an, or the.

1. This morning I bought …… newspaper and …… magazine. …… newspaper is in my bag but I don’t know where I put …… magazine.
2. I saw …… accident this morning. …… car crashed into …… tree. …… Driver of …… Car wasn’t hurt but …… car was badly damaged.
3. There are two cars parked outside: …… blue one and …… grey one. …… blue one belongs to my neighbours; I don’t know who …… owner of …… grey one is.
4. My friends live in …… old house in …… small village. There is …… beautiful garden behind …… house. I would like to have …… garden like that.