Differential Effects of Explicit, Implicit, and Incidental Teaching on Learning Grammatical Cohesive Devices

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Abstract—The present study investigated the effects of explicit, implicit, and incidental teaching of Grammatical Cohesive Devices (GCDs) on students’ application of these devices. Sixty Iranian intermediate EFL learners were selected and randomly assigned to three groups of 20. Each group received 15 hours of instruction during 10 sessions and was exposed to a different kind of instruction. The explicit group was exposed to conscious learning. In the implicit group the learners were exposed to grammatical cohesive devices through different instances and uses, and in the incidental group the learners underwent teaching GCDs without any conscious attention to these devices or their functions. Materials used for the research purposes were only reading passages although the learners were engaged in other activities too during the experiment. At the final stage of the treatment, all participants were given the same cloze test that was used in the pretests and were asked to complete the test by using appropriate GCDs. The findings indicated that the participants with explicit instruction performed better as compared with participants who received implicit and incidental instruction. However there was not a statistically significant difference between the implicit and incidental groups’ performance.

Index Terms—explicit, implicit, incidental, grammatical cohesive devices

I. INTRODUCTION

Cohesive devices constitute an important part of the system of language which has potentials for meaning enhancement. Cohesion occurs where the interpretation of one element in the text is dependent on the other. In other words, without resorting to other elements, either preceding or following an element, it will be difficult to decode it (Halliday & Hasan, 1976). Moreover it has been proved that cohesive devices give a well-organized structure to different skills.

In spite of their importance, grammatical cohesive devices (GCDs) have been ignored in Iranian EFL context which has had two adverse consequences: first, a large number of Iranian EFL learners are poor in recognizing word relations in texts; second, they do not know how to use these devices to produce complete meaningful sentences and texts.

To be proficient in using GCDs, learners must be able to engage in finding and using appropriate cues in texts and discourses through appropriate ways of teaching. Several studies (e.g., Bialystok, 1979; Gass, 1999; Laufer, 2001; Leow, 2000; Leung & Williams, 2011; Marzbani & Mokhberi, 2012; Nazari, 2013; Rahimpour & Salimi, 2010; Rott, 1999; Wode, 1999) indicate that explicit, implicit and incidental teachings of GCDs have differential effects on the language learning processes of students.

Most of the earliest research on GCDs was method oriented and examined differences resulting from exposure to different methods. However, it is a proven fact that, while we learn some cohesive devices formally in some very specific situations, incidental and informal learning are even more important for a comprehensive knowledge of these devices. Zamel (1983) argues that since linking devices, in spite of their importance in comprehension and production of different skills, are problematic for foreign language learners, different teaching and learning strategies should be used for effective presenting and teaching them.

This study investigated how different ways of teaching GCDs can affect Iranian EFL learners’ effective use of them and understanding textual relations. The study was justified by the scarcity of studies on the effects of teaching GCDs in Iranian context hoping that conducting such a research would be of help to Iranian EFL learners, teachers, and program developers.

A. Textuality and Grammatical Cohesion

McCarthy (1991) defines textuality as the feeling that the collection of sentences we are dealing with is not a chance collection. Text grammar is concerned with the way that sentences are glued or related to each other and it is different.
from sentence grammar whose focus is on how single sentences are constructed. Text grammar is, therefore, a
subsection of discourse analysis, which is preoccupied with units larger than sentence.

In every text the relationship between sentences should be clear. This clarity is called grammatical cohesion and is
created through using various GCDs. Grammatical cohesion helps the readers understand which items are referred to
and in a sense bonds different sections of the text to each other (Harmer, 2004).

In addition, to be able to interpret sentences which are semantically related, the existence of a shared linguistic
environment is necessary. A sentence such as “so did she” is both semantically and grammatically correct. However, we
do not know who the pronoun she refers to or what the activity was. This means that, we have to look at the sentence’s
surrounding environment to find out about these things and GCDs are essential in telling us where to look for such
information.

B. Types of Grammatical Cohesion

Halliday and Hassan (1976) introduce the major classes of GCDs pointing out that each of these major classes is still
divisible to a small number of discrete categories. The major classes of GCDs, according to Halliday and Hassan, are
reference, substitution, ellipsis, and conjunction, which provide a framework for describing and analyzing any kind of
text in terms of their coherence.

1. Reference: Reference relates one element of the text to another for its interpretation. It refers to “specific items
within a text/discourse which cannot be interpreted semantically in their own right but make reference to something
else” (Haliday & Hasan, 1976, p. 31).

2. Substitution: “Substitution, as another type of cohesive relation, is the process in which one item within a text or
discourse is replaced by another. It is a relation on the lexi-co-grammatical level between linguistic items, such as words
or phrases” (Haliday & Hasan, 1976, pp. 88–89).

3. Ellipsis: Ellipsis is an omission of an element required by the grammar which is assumed obvious from the context
and need not to be raised. The process can, therefore, be “interpreted as that form of substitution in which [an] item is
replaced by nothing” (Haliday & Hasan, 1976, p. 88).

4. Conjunction: Conjunction functions to connect one element of text with another. The element which is connected
can be a word, phrase, clause, sentence, or even a paragraph.

C. Methods of Teaching and Learning

1. Explicit learning: Ellis (1994) refers to explicit learning as a conscious search operation whereby an individual
makes hypotheses and tests them to come up with a structure.

2. Implicit learning: Implicit learning, in contrast, is defined as the natural acquisition of knowledge about a
structure which is complex without undue or conscious effort (Ellis, 1994).

3. Incidental learning: Incidental learning is defined by Hulstijn as the “learning something as a by-product of an
activity not explicitly geared to that learning” (2001, p. 271).

D. Research Hypotheses

H₁₀: Grammatical cohesive devices are not affected by teaching.

H₁₁: Methods of teaching do not affect the learning of grammatical cohesive devices differentially.

II. REVIEW OF THE RELATED LITERATURE

Explicit instruction and its effect on the efficiency of interpreting implicatures was the subject of Bouton’s (1994)
investigation of 14 non-native speakers of English. He was interested in knowing if classroom instruction of particular
rules and application patterns of implicatures could speed up interpreting skills of the students in a rather short time.
Results indicated that focused instruction of formulaic implicatures was extremely useful in developing the
interpretation skill.

Tateyama (2001) compared implicit teaching with explicit teaching by employing 102 non-Japanese university
students in Hawaii, who were learning Japanese sumimasen. A short video was shown twice to the implicit group
without asking them to get engaged in meta-pragmatic activities. The explicit group watched the movie only once but
the students in the group were asked to participate in explicit meta-pragmatic activities. Although Tateyama found no
significant differences between the groups he had studied, his conclusion was that explicit teaching facilitates the
acquisition of pragmatic routines more than the degree that implicit teaching does. Dastjerdi and Shirzad’s (2010)
findings were similar to Tateyama’s findings but in their study explicit instruction of meta-discourse markers had
significantly improved EFL learners’ writing ability in comparison to implicit instruction. The unpredicted finding was
that intermediate-level learners improved significantly greater than the advanced- and elementary-level students.

Along the same lines but in a rather limited study, Maeda (2011) examined the efficacy of implicit and explicit
teaching of the use of ‘please’ in the area of request strategies among 146 second year high school students. The results
showed that explicit teaching had an advantage because of the detailed explanation on the use of ‘please’ in the explicit
group. Secondly, understanding of the implicit teaching groups was lower. However, longer procedure, was speculated,
might change the result. Maeda’s findings were confirmed by Rahimi and Riasati (2012) who investigated the effect of
explicit vs. implicit instruction of discourse markers on learners’ oral production. Students attending the speaking course in one of the groups received no explicit instruction on DMs, whereas students attending the same course in the other group received instruction on them. Results indicated that participants in the implicit group did not show to use discourse markers frequently. In contrast, learners in the experimental group used discourse markers frequently in their speech.

Mobaleh and Saljooghian (2012) examined the effect of explicitly instructing reading strategies on learners’ perceptions of cohesive ties (reference, substitution, conjunction, and ellipses) in reading. Their findings revealed that this method can be helpful in improving learners’ ability in perceiving reference and ellipsis aspects of cohesive ties. The two other aspects (conjunction and substitution) were not improved so much. In a slightly different study, Rassouli and Abbasvandi (2013) found both positive and negative effects for teaching cohesive devices. It was found that instruction could promote the learners’ use of cohesive devices in writing, but the learners’ writing quality did not improve because the instruction led to more repetition in writings.

Another experimental study was carried out by Badiozzaman and Gorgian (2014) who investigated the effect of learners’ awareness of transition strategies on 60 pre-intermediate English as Foreign Language (EFL) learners’ performance in writing descriptive essays. The control group attending the writing course received conventional instruction, but the experiment group received an explicit treatment on how to use transition in their paragraph development. Results showed that the experimental group, who received instruction on transition strategies, used transitions in their writing essays more effectively. A process oriented program, conducted by Sahebkheir and Aidinlou (2014) found similar results. Students in the experimental group outperforming the control group in terms of using conjunctions appropriately. There are, however, studies with mixed results. For example, Yali (2010) explored the relationship between reading in L2 and the acquisition of vocabulary. He also examined the effect of different vocabulary instructional techniques, i.e., incidental vs. intentional on the vocabulary learning in Chinese universities. The finding was that both instructional treatments result in significant gains but greater gains and retention are only achievable when the two techniques are combined.

A series of descriptive studies have tried to statistically compare the proportions of GCDs used in different text types. Seken and Suarnajaya (2013), for example, aimed at analyzing students’ writings in terms of the types of cohesive devices used. The results of the study indicated that the students used all five types of cohesive devices to serve the coherence of their writings but reference with 40.84%, with personal reference as the dominant form, was the most used cohesive device. Lexical cohesion was used 37.99% dominated with repetition which was followed by conjunction 19.60%, ellipsis 1.35%, and substitution 0.29%. The results of the study implied that cohesion and coherence have to be given emphasis in teaching writing. Nga (2012) did the same thing in the context of ESP. The researcher found out that most frequently used cohesive devices in the reading texts were reference (43.98 %), then conjunction (39.72 %), and finally ellipsis and substitution (21.99 % and 1.42 %).

Nurhayati (2012) described and explained GCD’s errors in 66 essays written by his students. The results of this research were as follows: there were 817 errors on the use of cohesive devices identified in the students’ essays. The percentages of errors were: reference 79.07% and conjunction 17.26%. However, no error was found on the use of substitution and ellipsis.

Finally Farrokhi and Mahmoudi (2011), in the preface to their book Discourse Markers in English, point to the scarcity and misapplication of textual signals in Iranian students’ texts whether they are oral or written. In emphasizing the importance of GCDs, they provide more than one thousand contextualized and classified examples of these devices to show how prevalent they are.

III. METHODOLOGY

A. Participants

Participants of this study were Iranian male and female EFL learners whose ages ranged from 14 to 25. They were studying in an English language institute in classes in the northwest city of Ardabil. It was suspected that students’ proficiency levels might affect the results of the study, so learners were screened for their proficiency using Oxford Proficiency Test (OPT) and only intermediate level students were selected.

B. Procedure

The students were randomly assigned to three groups—one control and two experimental groups—and a pretest was given to all of them. The pretest was a ‘variable-ratio’ cloze test with only GCDs being omitted. After that, the distributions of learners’ scores were checked for normality to adopt the necessary measures in case they were in violation of the parametric tests’ assumptions. Because the distributions of scores were normal, a One-way ANOVA was run on students’ pretest scores to check for the homogeneity of the scores and to see if the groups were significantly different at this stage. The groups’ gains over time in terms of using cohesive devices appropriately were calculated by running Paired-Samples T-tests on their pretests and posttests’ results. Conclusions about which group had gained the most at the posttest stage and about the place of difference were made based on another One-way ANOVA and a post-hoc test that followed it. At the end, an effect size was calculated to find out about the strength of the difference. The test used to measure students’ gains and the teaching procedure are explained in the following paragraph.
The pretest consisted of 40 items measuring the learners’ knowledge of GCDs, 10 items for each category. Participants were given 40 minutes to answer the questions. Depending on the nature of methods—explicit, implicit, incidental—students in each group received 10 sessions of instruction amounting to 15 hours altogether. In the explicit group about one-third of the class time was allotted to the explicit instruction of GCDs. This amount of time was roughly kept constant for other groups too. In the Explicit group, explanations were followed by some practice to assure that the learners had understood the application of intended GCDs. For instance, reference and its types like personal references were explained and then followed by two examples as in (I like them/She gave it to us.). In the implicit group the learners were exposed to examples and uses of different kinds of GCDs like substitution or ellipses in the input-flooded texts but without any explicit instruction on their discoursal and grammatical functions. In the incidental group the participants learned GCDs through readings without any manipulation of the texts and the teacher’s only role was to help them figure out the meaning of texts.

C. Materials

Different instruments were utilized in the process of conducting this research. The instruments included Oxford Proficiency Test, Connect 1 and 2, their workbooks; the third volume of the Interchange 1 by Jack C. Richards (the orange book), its workbook and Halliday and Hassan’s (1976) book on GCDs.

In order to measure students’ performance in the area of interest, a cloze test with 40 items was also developed which was used both at the pretest and posttest stages. The reliability of this test was established using an appropriate statistical test as explained in the next section.

IV. Data Analysis

The OPT test used to screen the participants for their proficiency was not tested for its reliability because it is a standard test the reliability of which is already established. But, the reliability of the cloze test used both in the pretest and posttest was checked. The result of the Cronbach’s Alpha internal-consistency reliability calculated using SPSS is given below.

<table>
<thead>
<tr>
<th>TABLE 4.1</th>
<th>RELIABILITY OF THE PROFICIENCY TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability Statistics</td>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td></td>
<td>.755</td>
</tr>
</tbody>
</table>

The test gives a relatively high reliability value. Reliability values above .70 are acceptable according to Pallant (2013). As the next step, the normality of the distributions of pretest scores, as one of the assumptions of parametric tests, was controlled for by running a 1-Sample KS test. Table 4.2 represents the results of this test.

<table>
<thead>
<tr>
<th>TABLE 4.2</th>
<th>NORMALITY OF THE PRETEST SCORES’ DISTRIBUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-Sample Kolmogorov-Smirnov Test</td>
<td>pretest explicit group</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Kolmogorov-Smirnov Z</td>
<td>.408</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.996</td>
</tr>
</tbody>
</table>

a. Test distribution is Normal.

As can be seen in Table 4.2, all sig values are non-significant which means that the normality assumption was not violated. The finding that the distributions of scores are normal, however, is not enough and should be buttressed by the other two assumptions of parametric tests, that is, the homogeneity of variances and the independence of scores. The latter requirement had already been met because all data points came from different people. However, to test for the homogeneity of variances in the groups running a One-way ANOVA was necessary. This test, in addition to producing Leven’s homogeneity table, could help us ascertain that the groups did not have any significant differences at the beginning of the study. Tables 4.3 and 4.4 below show the results of these tests.

<table>
<thead>
<tr>
<th>TABLE 4.3</th>
<th>TEST OF PRETEST SCORES’ HOMOGENEITY OF VARIANCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest scores</td>
<td>Leven’s Statistic</td>
</tr>
<tr>
<td></td>
<td>.708</td>
</tr>
</tbody>
</table>
A non-significant value for the Leven’s test means that the groups were similar in terms of homogeneity. The ANOVA table also shows no statistically significant difference at $P < .5$ level in pretest scores among the three groups: $F (2, 57) = .059, P = .943$. Figure 4.1 represents this finding in the form of a bar chart with overlapping error bars and figure 4.2 represents similar information with boxplots.

![Figure 4.1 Bar charts representing the means of scores at pretest](image1)

![Figure 4.2 Boxplots representing pretest scores' features](image2)

That error bars overlap in Figure 4.1 points to the fact that the means of these three groups were not substantially different at the pretest stage. The boxplots, too, provide us with visual information about the ranges, variances, and medians of these groups, which are very similar.

The next step in our data analysis was to compare the participants’ gains from pre- to posttest in each group to discover if any significant changes had happened. To this end, running Paired-samples T-tests were inevitable. The results of the T-tests and their accompanying bar chart with error bars are given below.

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### Table 4.5
**Paired-samples T-tests Comparing Pretest and Posttest Results**

<table>
<thead>
<tr>
<th>Paired Samples</th>
<th>95% Confidence Interval of the Difference</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>pretest explicit group - posttest explicit</td>
<td>-17.21456</td>
<td>-13.78544</td>
<td>-18.921</td>
<td>19</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 2</td>
<td>pretest implicit group - posttest implicit</td>
<td>-11.82809</td>
<td>-9.17191</td>
<td>-16.548</td>
<td>19</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 3</td>
<td>pretest incidental group - posttest incidental</td>
<td>-10.32472</td>
<td>-7.77528</td>
<td>-14.860</td>
<td>19</td>
<td>.000</td>
</tr>
</tbody>
</table>
It is obvious from Table 4.5 (with all P values equal to .000) and Figure 4.3 (with non-overlapping error bars in each group) that all three groups have made significant improvements in their use of GCDs from pretests to posttests. At this point it is necessary to compare the means of all three groups in posttest stage to find out whether the teaching methods taken together had any significant effect on the performance of groups. If this proves to be the case, running a post-hoc test to find the location of difference or differences will be inevitable, although from figure 4.3 we can tentatively say that the main difference lied between explicit and incidental groups. Table 4.6 shows the results of ANOVA run on posttest data.

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>424.933</td>
<td>2</td>
<td>212.467</td>
<td>12.193</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>993.250</td>
<td>57</td>
<td>17.425</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1418.183</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We can see clearly in the table that the difference between the groups is significant at $F(2, 57) = 12.193, \ P = .000$. This compels us to run the post-hoc test the results of which are given in Table 4.7 below.

<table>
<thead>
<tr>
<th>Multiple Comparisons</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(I) posttest groups</td>
<td>(J) posttest groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>-4.60000</td>
<td>1.32005</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6.30000</td>
<td>1.32005</td>
<td>.000</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>-4.60000</td>
<td>1.32005</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1.70000</td>
<td>1.32005</td>
<td>.442</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>-6.30000</td>
<td>1.32005</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>-1.70000</td>
<td>1.32005</td>
<td>.442</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Scheffe post-hoc test reveals that there is no statistically significant difference between the Implicit group (M=29.25, SD=4.32) and the Incidental group (M=27.55, SD=3.67). However, significant differences can be seen between the Explicit group (M=33.85, SD=4.47) and the Implicit group (M=29.25, SD=4.32) and also between the Explicit group (M=33.85, SD=4.47) and the Incidental group (M=27.55, SD=3.67). These findings can be shown visually using a means plot as represented in Figure 4.4 below.
V. DISCUSSION

Our results from analyzing the data reveal that we have to reject both first and second hypotheses. In the case of the first hypothesis, the results of Paired-samples T-tests showed significant gains from pretests to posttests. In the case of method effect, we learned from the ANOVA and post-hoc tests that there had been a real difference and that this difference lied between the explicit and incidental and explicit and implicit groups but not between the implicit and incidental groups. These findings are in conformity with a lot of studies that were referred to in the review of the related literature section. Although there were a few studies with mixed results, the majority of the studies reviewed for the sake of this study confirmed superiority of the explicit teaching of GCDs over the implicit and incidental teaching methods as was found in this study.

REFERENCES


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