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Effects of Google-informed Pattern-hunting and Pattern-defining on Iranian EFL Learner's Writing Ability

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Abstract – The Internet and the existing search engines assist the learners' community to access educational materials. This study was designed to investigate the effects of two web related techniques (Google Informed Pattern Hunting and Pattern Defining) on female intermediate Iranian learners' writing skills. From a population of 200 EFL learners, 57 female EFL learners who, through taking an Oxford Placement Test (OPT), were identified as intermediate students took part in the study. These students had the age ranging from 13 and 22 years old. After taking a pretest on writing skills, they were divided into two experimental groups (Pattern Hunting group and Pattern Defining group). While the first group was required to use pattern hunting techniques, and the second group was required to use pattern defining techniques. The findings indicated that both techniques changed the writing skills of the participants in a significant and positive way. Further analysis of the data revealed that there was not any significant difference between the two techniques in terms of their effect on writing skills of the participants. The findings have some pedagogical implications for language instructors and material developers.

Keywords*:* writing skill, Google-informed pattern-hunting, Google-informed pattern defining

1. INTRODUCTION

The Internet and the existing search engines assist the learners' community to access the educational materials. The World Wide Web provides instructors with a novel means to access the instructional materials, allowing a wider opportunity for learning from schools to home or workplace and the ability to deal with a wide variety of backgrounds and contexts (Agarwal, 2010). Then, as with any other instruments, the best ways for applying the new technologies to the learning process with proven educational benefits need to be identified.

The Internet has provided new opportunities as well as new challenges for language learners and language teachers to go online. Thus, the Internet-based online language learning is turning into a key mechanism for the provision of off-school learning (Picciano & Seaman, 2009). The internet technology is one of the most effective means of providing such rich learning environment, which can work in cooperative projects between the various schools, and the students to develop their knowledge of subjects through contact with colleagues and experts with the same concerns (Means, Toyama, Murphy, Baka, & Jones, 2009).

Language teachers relentlessly search for more efficient ways of incorporating the Internet to provide an interactive learning situation to attract the attention of learners. It is the responsibility of students seeking information which develop their thinking skills. The

communication via the Internet enhances writing skills of English language learners where they and the teachers exchange texts written in English on various topics and different levels (Al-Bataineh, 2010).

One aspect of the incorporation of the Internet into learning environment is related to the search engine "Google". Google is the search engine which provides a set of opportunities for language learners, ranging from Google as translator of texts to Google as a super corpus to drive written language learning (Sha, 2010). Regarding the corpus-based use of Google, it can be used in different ways, methods, and techniques. Two of the techniques which might be exploited for the purpose of enhancing language related skills in general and writing skills in particular are Pattern-hunting and Pattern-defining (Panah, Yunus, & Embi, 2017). Pattern-hunting refers to the use of a corpus (in this study, the Google) for enriching the content and language of their text; Pattern-defining refers to editing the produced text based on a comparison with Google corpus for lexico-grammatical accuracy (Kennedy & Miceli, 2010).

Writing skill is one of the most challenging tasks that any learner encounters while acquiring another language specially, when students develop greater fluency and expression in English. Google-informed Pattern hunting and Pattern defining give students an idea, or hint, of what an unfamiliar word or structure might mean (Panah, Yunus, & Embi, 2017). Thus, the purpose of this study was to consider the effects of teaching "Google-informed Pattern hunting and Pattern defining" on Iranian intermediate EFL learners' writing ability.

2. RELATED STUDIES

A descriptive study on the use of technology such as the Web corpus tools for writing by Stapleton and Radia (2009) strongly suggests that Google-driven corpora can be valuable source of information for ESL learners in the process of their ESL writing course, provided that they are trained in Google consultation. In relation to PD and correction, they state that "during the writing process, students check any doubtful phrases they have composed for their frequency counts in Google (advanced search with the phrase in quotations). A low-frequency count suggests that the composed phrase may be non-standard English". They add "it appears that while corpus tools can bring clear advantages to the composing of some L2 students, both training and motivation to take the extra steps to use them are necessary" (p. 177). Hence, they highlight the role of training in relation to the Web corpus consultation.

In a related study, Wu (2010) studied the students' use of corpora and the Web-based corpus, through an off-line collocation learning system, constructed based on Google, to examine how they use the function of pattern-hunting to expand their text. The findings of his observation and questionnaires show that three out of 12 students did some kind of pattern-hunting, and the result was promising. He reported that syntactic errors, erroneous sentence structures, and imperfect sentences were prevalent throughout their work. He argues "because of the constraints of the topic—themselves and their family— and their limited language ability, their writing exhibited a narrow range of vocabulary and few idiomatic expressions. For example, the four most common words used were like, come, want and live. Sentence structure was simple and basic" (Wu, 2010, p.119). He concludes that proficiency is an issue which is a barricade making less proficient learners sluggish in relation to PH and text

generation and confining their activities to text revision and correction. However, this study was not on direct use of Google for pattern-hunting, but it paves the way for the further study.

Conroy (2010) studied the Internet tools including Google for language learning and writing improvement. His motivation was Australian universities' challenges in terms of teaching EAL (English as an additional language) students. He selected four cohorts of students with different language proficiencies (165 students). Following training in online corpora and GALL tools and techniques, students used the function of PD. The results reveal that there is little evidence of universities' engagement with internet-based corpus tools and techniques for language promotion. Also, the findings of pre and post-training questionnaires and interviews show that students perceive concordancing and GALL consultation useful for language learning and writing improvement. In addition, he reported that "by inspecting frequently occurring word combinations the learner has improved his/her writing in a data-driven learning process" and "helped the student to acquire the means and confidence to self-edit in the future" (2010, p. 867), that is, they autonomously used concordances and Google for improving their writing assignment. As he points out, care should be taken that regarding learning styles students differ. He adds "the propensity for students to engage with GALL and concordancing might be a function of learning style" (p. 880).He concludes that unfamiliarity with inductive discovery learning by some students might be a factor in being reluctant and less impressive in using corpus. Nevertheless, yet this study has some limitations. For example it did not address the issue of the naturalness of GIPD and also the function of GIPH was not dealt with.

Hafner and Candlin (2007) is the only study that examined the learners' corpus use based on the data collected as they used the corpus rather than their reflective accounts and without imposing the corpus-based assignments. The data in their study, however, consists of only the searches that the learners entered into the corpus, while missing the actual interactions. Similarly, Sha (2010) researched the use of Google in comparison with British National Corpus (BNC) for L2 writing improvement. His study aimed at examining technical obstacles in using corpora exploring the reason why the DDL approach was unpopular in the process of language teaching and learning. In this qualitative study he observed and examined two types of learners' writing samples namely, TEFL writing classes and English learning the Web sites. His samples patterns included bi-grams, tri-grams, and four-grams. He used Google advanced search with preferences and BNC. He found that Google retrieval is faster than BNC and yields far more results either in number or in comprehensiveness. He states that "the dynamic corpus or search-engine-based corpus is superior in usability, search speed, the number of solutions and above all, preference investigations" (2010, p. 377). He also shows that Google has spellchecker which BNC lacks. He concludes that there is "a strong evidence that static corpora are losing ground to the Web corpora" (2010, p. 390). Thus, he reminds us of the outstanding capability of Google as a concordancer which can take the place of conventional corpora in terms of GIPH and GIPD, there by promoting DDL and the Web corpus consultation.

In a somehow related study, Wu et al. (2011) reported that IELTS learners made use of concordances, offered by a collocation learning system empowered by Google, with high success rate of error correction, they corrected 73 out of 108 without assistance, and consequently, their attempts resulted in natural and native like collocations. However, although they argued that due to the messy status of the Web corpus, direct use of Google as concordance

would be challenging for ESL/EFL learners, as most researchers have strongly suggested, training in GIPH and GIPD can alleviate this problem.

Correspondingly, Geluso's (2012) study focused on the naturalness of GIPD, based on the frequency of occurrences on the Web. He selected 25 Japanese EFL learners and set them to write essays about nine paragraphs. Following training, he got them to Google draft their essays and correct their erroneous patterns. Then he recruited 4 native speakers of English to blind rate learners' Google-informed and non-Google-informed patterns, in terms of their naturalness. The result of his study strongly suggests that by using the Web as a corpus and Google as a concordancer, students can improve the naturalness of their writing. Luo (2016) in a study considered the effect of direct or indirect application of corpus technology, on EFL' learners' writing development. The quantitative results of the his study reveal that DDL activities in the redrafting stage have significantly positive effects on EFL' learners' writing development in terms of fluency and accuracy. In addition, the online corpus BNC web is obviously better than the search engine Baidu in developing learners' writing fluency and accuracy.

Yoon (2016) in a study entitled "concordancers and dictionaries as problem-solving tools for ESL academic writing" investigated how 6 Korean ESL graduate students in Canada used a suite of freely available reference resources, consisting of Web-based corpus tools, Google search engines, and dictionaries, for solving linguistic problems while completing an authentic academic writing assignment in English. The findings of this study suggest that using concordancing tools along with other complementary reference resources within a single interface may provide advanced L2 writers in academic settings with means and motivation to engage in robust meaning negotiations during their L2 written language production and therefore ultimately help them become more confident and autonomous as writers. However, as evident in the various cognitive, affective, and technical forms of challenges and difficulties the participants experienced in their uses of the reference suite, effective and meaningful uses of reference tools should be preceded by appropriate training and guidance.

Panah, Yunus and Embi (2017) conducted a study entitled " Google-Informed Patter-hunting and Pattern-defining: Implication for Language Pedagogy". Seven studies included in their review show that learners' use of GIPH and GIPD champions the promotion of their language learning and L2 writing, providing that proper training and scaffolding are provided. The results of their study shows that the use of the Web as a corpus and Google as a concordance, by providing the learners with huge amount of authentic natural language patterns, has been regarded as one of the promising areas with great potential for revolutionizing language pedagogy and L2 writing. Particularly, the functions of GIPH and GIPD can promote natural L2 writing through DL and DDL. For example a learner who is vacillating between two patterns in terms of the accuracy and naturalness, s/he can check the patterns in hand based on frequency of occurrences on the Web via Google Scholar or even search for and discover appropriate patterns.

3. PROBLEM STATEMENT

While there is a rich literature on the role of the Internet in general and Google as corpus in particular, there are some gaps which need to be filled. First, in spite of the fact that there are

lots of studies in this area of research in other countries, only few studies have been conducted in the Iranian context. Since the accessibility to the Internet and the way it is used in each country is different from other countries, the degree of efficiency of its incorporation into educational contexts might vary. Second, whereas there is a rich literature on the efficiency or deficiency of the Internet in other aspects of human life (e.g. social health), studies related to language achievement are scarce. Third, it looks as if there are lots of contradictions among the results in finding out if the use of Google as a corpus enhances language related skills or not. This might be due to the operationalization and the scope of previous studies. Although there are lots of studies which support the corpus-based use of the Internet, some studies have failed to find the efficiency of the Internet (Agarwal, 2010).

The second gap which is intended to be filled in this study is related to the contribution of online corpus to learners' writing development. Park (2010) maintains that regarding the efficiency of online corpus to learners' writing development there is only anecdotal evidence (Park, 2010). Moreover, previous studies of the role of online-corpora have not investigated the learners' experiences while they utilize the corpora. Some studies (Chambers, 2005; Yoon & Hirvela, 2004), for instance, reported that the learners build confidence in vocabulary and writing skills through their use of online corpus. The studies, in fact, relied on retrospective perceptions as recounted by learners in surveys, questionnaires, written reflections, and interviews (the studies did not make first-hand observations of the students' experiences). To date, no investigation has studied learners' interactions with corpora through the real-time, direct observations. The role of a corpus-assisted learning in enhancing lexico-grammatical performance, thus, remains largely unexplored. Then, the third gap which is considered in the present study lies in the fact that it directly (experimentally) addresses the role of online concordance (Google) and its effects on writing skills.

4. RESEARCH QUESTIONS

1. **RQ:** Does Google Pattern-hunting have a significant effect on Iranian intermediate EFL learners' writing skills?
2. **RQ:** Does Google Pattern-defining have a significant effect on Iranian intermediate EFL learners' writing skills?
3. **RQ:** Is there a significant difference between Pattern-hunting and Pattern-defining in terms of their effect on intermediate Iranian EFL learner's writing skills?

5. METHODOLOGY

5.1. Participants

To achieve the goal of this study, 200 students of Payam Persa Institute, Isfahan, Iran, were randomly selected. To carry out the present research, intermediate students were recruited as participants. Then, after administering an Oxford Placement Test (OPT), 60 students were selected as participants. 30 students as the first experimental group (pattern –hunting) and 30 students as the second experimental group (pattern- defining). The age of participants was between 13 and 22. The participants were female. Three participants were omitted during the process of data gathering, because their tests were half- filled and problematic. So the results

of study were reported based on 28 participants in the first experimental group and 29 participants in the second experimental group.

5.2. Material

The main material which was used throughout the process of carrying this study out was their text book: *Summit*. As part of their course, the participants were covering a textbook, Summit. The book was published by *Oxford University Press.* The book was selected because they offer appropriate topics for the current study since it did not include abstract concepts. Moreover, by selection of the topics from the textbook, the normal class activities were not interrupted. TEFL experts were also consulted about the validity about the validity of the material for the context of this study. The experts confirmed the textbook.

5.3. Instruments

OPT

To check for any primary difference between the participants of the study, an OPT, which is an English language examination provided by Oxford University Press and University of Cambridge Local Examinations Syndicate, was given to students. The test demonstrates the ability to communicate using English for everyday purposes. This is the main instrument in the present study. It includes 60 items in multiple choice format. According to the test designers participants who score between 28 and 47 must be assigned as intermediate learners. The participants were allowed to answer the questions in 30 minutes.

Writing Test

In this study, the researchers designed a persuasive writing test used both as pre- test and post-test. For the current study, six writing topics were selected from among the taught to both groups as part of the syllabus. The participants were requested to write a 5-paragraph essay and use specific reasons and examples to persuade people or other companies to buy their products. The researchers found these topics appropriate for the current study since they did not include abstract concepts. Moreover, by selection of the topics from the textbook, the normal class activities were not interrupted. The tests results were checked for internal consistency using Pearson Correlation Coefficient. The writings were graded and scored using the Six Traits of Writing rubric and the Kansas Composite Formula. According to this framework, writing tasks are scores based on six criteria including: Ideas and content, organization, voice, word choice, sentence fluency, and conventions.

The writing tasks were scored by two raters to enhance the reliability. The raters were TEFL experts with more than five years of teaching experience. The correlation results indicated that the correlations have been high among the two raters. This suggests that the given rater, had delivered the objective scores to the students.

5.4. Procedure

This study was conducted in Payam Persa Language Institute, Isfahan, Iran. To carry out the present research, intermediate students were recruited as participants. The study started in the

summer of 2017 and the intervention occurred from June, 21st to August 15th. The class was held for 16 sessions, twice a week (Saturday and Monday). The researchers recruited 60 participants from a population of 200 students after administering an Oxford Placement Test (OPT). The participants took OPT in 30 minutes and those who scored between 28 and 47 were assigned as intermediate learners and participants of the study. The participants were female; the age of participants was 13 and 22. 30 students were selected as the first experimental group (pattern hunting) and 30 students as the second experimental group (pattern defining).Through conducting an informal interview; it was assured that all the participants were familiar with the mechanism of Google search engine. Three participants were omitted during the process of data gathering, because their tests were half-filled and problematic. For this reason, the results of the study were reported based on 28 participants in the first experimental group, and 29 participants in the second experimental group. The pre-test writing was administrated to students of both groups, at the same place and time. Immediately after taking the test, the two groups were separated. The participants were randomly divided into two groups: the first experimental group and the second experimental group. The first experimental group in this study was required to use pattern hunting techniques while the second experimental group was required to use pattern defining techniques. During the class time students covered with their textbook (*Paragraph Development)*. As the home work, the participants of both groups were required to deliver a writing task each session. The topics of the tasks were taken from their textbook. In fact, the participants of the two groups delivered around 14 writing tasks at the end of the treatment. However, there was a difference between the students of the two groups during the process of providing writing tasks: In the Pattern hunting group, two principal techniques were browsing through whole texts, chosen on the basis of text type and title, and perusing frequency lists for common two-word, three-word, or four-word combinations. On the other hand, pattern defining group participants were concerned with finding models when they had a specific target pattern in mind for use at a particular point in a text" (Meceli, 2010, p. 33).Usually it is a matter of knowing some of the component words and seeking a model for the exact structure required; for example: which preposition is required after a verb in a certain context, or the position of an adjective relative to a noun phrase in a particular linguistic structure. In fact, the participants of pattern defining group consulted the Google after they had produced the primary version of their writing task while the participants of pattern-hunting group consulted the Google before they produced the primary version of their writing task. After the treatment was finished, the participants of the two groups took the post test of writing. In needs to be added that neither pre- test nor post- test topic was covered before, during the treatment.

5.5. Design

The design of this study was quasi-experimental in which there were two experimental groups: pattern-hunting group and pattern-defining group. The first experimental group in this study was required to use pattern hunting techniques while the second experimental group was required to use pattern defining techniques.

6. RESULTS

6.1. Inter-Rater Reliability

Since measuring writing test of participants is to some extend subjective, two raters scored writing tests and the results taken from the two raters were compared through Pearson Correlation Coefficient. The *r value* for the two groups, before and after the treatment, are presented in Table 1.

Table 1: The correlation results between the two raters, first and the second experimental groups, before and after treatment

Inter-rater	Sig.	Pearson correlation
Exp 1, pre-test	0.00	0.625**
Exp 2, pre-test	0.00	0.639**
Exp 1, post-test	0.00	0.662**
Exp 2, post test	0.00	0.936**

**. Correlation is significant at the 0.01 level (2-tailed).

As the correlation results indicate, the correlations have been significant between the two raters. This suggests that the given scores had been reliable scores which were given to students' pre and post- test writings.

Table 2: Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
P.Hunting pre	.096	28	.200*	.980	28	.842
P.Defining pre	.087	28	.200*	.978	28	.811
P.Hunting post	.115	28	.200*	.969	28	.551
P. Defining post	.076	28	.200*	.984	28	.941

As the results of Shapiro-Wilk reveals the size of Sig. in none of the data sets is less than 0.05 which shows that the distributions have been normal.

6.2. The First Research Question

The first null hypothesis was concerned with the role of Google informed pattern hunting on intermediate students' writing ability. A paired t-test procedure was used to compare writing skills difference of the first experimental group before and after the receiving treatment (pattern hunting). However, before comparing the results of pre and post- test writing ability, there was a need to check if mean scores have changed or not. Descriptive statistics for the writing skills related to pre and post- test among participants of the first experimental group is indicated in Table 3.

Table 3: Descriptive statistics related to pre and post- test writing score of pattern hunting (first experimental) group

Descriptive Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Writing skills	P. Hunting pre	3.3321	28	.60851	.11500
	P. Hunting post	3.5161	28	.50774	.09595

As the results of Table 3 indicate writing skills was enhanced after the participants received pattern hunting instruction. While writing skills in the first experimental group's writing was around 3.33 before the intervention, its size rose to 3.51 after participants pattern hunting practice during intervention. To check the significance of writing skills difference which was resulted from pattern hunting instruction, first experimental group participants' scores from pre and post writing test were compared through carrying out a paired samples t-test. The results of the t-test indicated that writing skills of the first experimental group participants after receiving pattern hunting instruction was significantly enhanced. ($p > 0.5$; Sig. (2-tailed) = 0.007). More information is provided in Table 4.

Table 4: Paired samples t-test for comparing writing skills before and after practicing pattern hunting

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		df	Sig. (2-tailed)
					Lower	Upper		
Experimental 1	Writing skills	-.18393	.33526	.06336	-.31393	-.05393	27	.007

As the t-test result indicates the participants in the first experimental group who practiced pattern hunting has significantly higher level of writing skills after the intervention. In fact the difference of mean scores before and after the intervention has not been due to chance, but because of intervention. Therefore, based on the results of data analysis reported above, the first null hypothesis, predicting an insignificant role of Google informed pattern hunting practice in enhancing learners' writing skills, was rejected.

6.3. The Second Research Question

The second null hypothesis was concerned with the role of Google-Informed Pattern defining on Iranian EFL learners' writing skills. A paired samples t-test procedure was used to compare the pre- test and post test results of writing test of the second experimental group (Google-Informed Pattern defining). However, before comparing the results of pre and post writing test, there was a need to check if mean scores of writing skills have changed or not. Descriptive

statistics for participants writing skills related to pre- test and post- test comparison of the second experimental groups' (pattern-defining) writing skills is illustrated in Table 5.

Table 5: Descriptive statistics related to pre and post- test writing skills of the second experimental group (pattern defining group)

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Writing Skills	P. Defining pre	3.2924	29	.47320	.08787
	P. Defining post	3.5828	29	.60390	.11214

As the results of Table 5 indicates, mean score for writing skills has changed after practicing Google-Informed Pattern defining. While their writing skill was around 3.29 before practicing Google-Informed Pattern defining, their writing skill was raised to 3.58 after intervention. To check the significance of writing skill difference which was resulted from Google-Informed Pattern defining, the mean writing skill scores from pre- test and post- test were compared using paired samples t-test. The results of t-test indicated that students' writing skills has risen after practicing Google-Informed Pattern defining. This means that the increase of writing skills among participants who practiced Google-Informed Pattern defining has been statistically significant ($p > 0.5$; Sig. (2-tailed) = 0.027). More information is provided in Table 6.

Table 6: Paired samples t-test for comparing writing skills before and after practicing Google-Informed Pattern defining

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		df	Sig. (2-tailed)
					Lower	Upper		
Traditional	P. Defining pre - P. Defining post	-.29034	.43880	.08148	-.45726	-.12343	28	.001

As the t-test result indicates the participants in Google-Informed Pattern defining group have significantly different writing skill after practicing Google-Informed Pattern defining. Therefore, based on the results of data analysis reported above, the second null hypothesis, predicting an insignificant role of Google-Informed Pattern defining in developing intermediate EFL learners' writing skill, was rejected.

6.4. The Third Research Question

The third null hypothesis was concerned with the role of Google-Informed Pattern defining and pattern hunting practice in enhancing participants' writing skills. The findings from last two research questions indicated that both Google-Informed Pattern defining and pattern hunting

practice enhance students writing skills. However, the third research question was designed to investigate which of the two types of intervention would change students' writing skills more strongly. To this end, two independent t-test procedures were used to compare the writing score between the two groups, before and after the intervention. Descriptive statistics for writing skills related to pre- test comparison of the two groups' writing test scores is shown in Table 7.

Table 7: Descriptive statistics related to pre-test writing score difference of the two groups

Group Statistics					
	Grouping	N	Mean	Std. Deviation	Std. Error Mean
Pretest Difference	Pretest-Exp1	28	3.3321	.60851	.11500
	Pretest-Exp2	29	3.2924	.47320	.08787

As Table 7 indicates, the two groups had different writing skills before practicing pattern hunting and pattern defining. While mean writing score of pattern hunting instruction (first experimental group in pretest equaled 3.33, that of Google-Informed Pattern defining (second experimental) group equaled 3.29. Although mean writing score across the two groups during pretest was different before intervention, it needs to be statistically investigated if this difference is significant or not. To check the significance of writing skill score difference across the two groups, the means were compared (Table 8). The results of t-test indicated that, as we expected, the writing score difference between the two groups, in the pre- test was not significant ($p > 0.5$; Sig. = .11).

Table 8: Pretest comparison of the two groups' writing score difference

		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pretest	Equal variances assumed	2.361	.130	.276	55	.784	.03973	.14409
Difference	Equal variances not assumed			.275	50.976	.785	.03973	.14473

As the Table 8 indicates, Levene test result is higher than 0.05, which by itself indicates that the two groups are homogeneous. Since Levene test t-test result is not equal to 0 (zero), it is need to have the equal variance assumed (the first row) for the Sig. (2-tailed), which equals 0.784. As the t-test result indicates the two groups were not significantly different before the treatment. However, as the post test result indicated, students' writing score had changed after the treatment. While participants' pre-intervention mean writing score equaled 3.33 and 3.29 in pattern hunting instruction group and Google-Informed Pattern defining groups, after intervention their mean writing score was raised to 3.51 and 3.58, respectively. Descriptive statistics for post- test writing score difference of both groups is indicated in Table 9.

Table 9: Descriptive statistics related to post-test writing score difference of the two groups

Group Statistics					
	Grouping	N	Mean	Std. Deviation	Std. Error Mean
Posttest Difference	Posttest-EXP1	28	3.5161	.50774	.09595
	Posttest-Exp2	29	3.5828	.60390	.11214

Independent samples t-test was carried out to check if this difference is statistically significant or not. The results of post intervention indicates that pattern hunting practice raises participants' writing skills more than pattern-defining does. In other word, based on the results, participants' writing scores among pattern hunting group was not significantly higher (t-test for $p< 0.05$ is not significant). T-test results have been shown in Table 10. T-test results for $p< 0.05$ equaled 0.654.

Table 10: Posttest comparison of the two groups' writing score difference

		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Posttest	Equal variances assumed	.671	.416	-.450	55	.654	-.06669	.14804
Difference	Equal variances not assumed			-.452	53.994	.653	-.06669	.14759

Therefore, based on the results of data analysis reported above, the third null hypothesis, predicting an insignificant difference between pattern hunting practice and Google-Informed Pattern defining in terms of developing Iranian intermediate students' writing skills, was supported.

7. DISCUSSION OF THE FINDINGS

7.1. The First Research Question

Regarding the research question, analysis of the data revealed the significant role of Google informed pattern hunting in developing Iranian intermediate language learners' writing skills. There are other studies with scopes and findings close to the present study. Although inderectly, Sha's (2010) findings confirm the findings of the present study: He claimed that the use of Google as concordancer is winning the ground from other corpora. The findings of the present study were indirectly confirmed by Stapleton and Radia (2009) who were set out to investigate the way language learners use Google search for enhancing their language related skills. The findings revealed that during the writing process, students can check any doubtful phrases they have composed for their frequency counts in Google (advanced search with the phrase in quotations). The students also reported that a low-frequency count suggests that the composed

phrase may be non-standard English. Indeed, the language learners were found to be practicing pattern hunting and pattern defining without any previous training or instruction. Not all previous studies, however, are in line with the present study. Conroy (2010) for instance maintains that there is little evidence of engagement with internet-based corpus tools and techniques for language promotion by universities.

7.2. The Second Research Question

Regarding the research question, analysis of the data revealed the significant role of Google informed pattern defining in developing Iranian intermediate language learners' writing skills. Geluso (2011), for instance, was set out to investigate the effects of Google-Informed Pattern defining in enhancing the naturalness of their writing tasks. The findings were in line with the results of this study: The result of his study strongly suggests that through utilizing the Web as a corpus and Google search engine as a concordancer, language learners can significantly improve the naturalness of their writing tasks. Panah,Yunus, & Embi (2017) reported parallel findings. They were set out to investigate the role of pattern defining in enhancing language related skills. They reported that pattern defining promotes language learning and L2 writing among EFL learners.

7.3. The Third Research Question

Regarding the research question, analysis of the data revealed that there is no significant difference between the pattern hunting and pattern defining in terms of their effect on enhancing writing skills of intermediate EFL learners. The analysis of the data in the first and the second research question had revealed that both techniques are useful in enhancing writing skills. Then, it can be inferred that the use of Google as a concordance improves writing skills. These findings are in line with Conroy (2010) who was set out to measure EFL learners' perceptions and uses of concordancers/Google for language learning and writing improvement. He reported that EFL learners' concordancing and Google consultation are useful approaches for language learning purposes and writing improvement. The findings of the present study are also in line with Wu (2010) who was set out to investigate the Students' use of corpora and the Web-based corpus, collocation learning system, to examine how they use pattern defining and pattern hunting to generate and expand their text. The findings revealed that students using the system preferred one of the two strategies. Most of the participants preferred to finish their writing first and then used it to check text they were uncertain of (pattern defining). However, other participants used the system to help generate text by finding the correct usage of a word and suggesting suitable sentence structures (pattern hunting). Indeed, the participants in Wu's study preferred pattern defining to pattern hunting. Wu stated that the participants corrected 73 out of 108 errors without assistance, and consequently, their attempts resulted in natural and native like collocations. Although these findings (preferring pattern defining to pattern hunting) were reported in the present study, it was not statistically significant. The efficiency of Google in enhancing writing skills has been attributed to the fact that Google allows and enables ESL/EFL learners keep abreast of wide range of ever-growing, authentic, and natural language patterns.

8. CONCLUSION

To probe the role of Google informed pattern hunting and pattern defining in students' writing skills, a persuasive writing test was administered to both groups in pre- test and post- test. After comparing the mean scores of pre- test and post- test results, it was revealed that both Google informed pattern hunting and Google informed pattern defining enhance participants' writing skills. However, further analysis of the data indicated that Google informed pattern defining had resulted in higher writing skills, in comparison to Google informed pattern hunting. In other words, while both Google informed pattern hunting and Google informed pattern defining enhance students' writing skills, the latter results in more positive change in their writing skills. Except for one study (Conroy, 2010) literature seemed to be consistent on the role of the two techniques in developing writing skills. While most previous studies were in line with the findings of this study (e.g. Geluso, 2011; Sha, 2010; Shei, 2008; Stapleton & Radia, 2009), some findings of Conroy (2010) contradicted the findings of the present study. Various explanations regarding the obtained results and existing contradictions can be offered. Firstly, learners' proficiency could have been a decisive variable on the effectiveness of Google informed pattern hunting and pattern defining. EFL learners need to have threshold level of general English proficiency to be able to use Google as a concordancer. Then, the contradiction between this study and previous studies might be related to the difference in the nature of the participants. Moreover, the role of context of the study should not be ignored. The parallel and the contradictory findings of this study might be due to the fact that previous studies had been conducted in other countries. Since accessibility and attitude toward the Internet is not the same throughout the world, the studies on the role of the Internet in language learning might be different depending on the context of the study.

Considering the significant role of Google informed pattern hunting and Google informed pattern defining in developing writing skills in the context of this study, one point needs to be added here. Based on the findings of this study, receiving Google informed pattern hunting and Google informed pattern defining changes *Intermediate EFL* learners' writing skills who age between 13 and 22. The focus on participants, context (Iran), proficiency, and age lies in the fact that, as mentioned in chapter four, these factors interact with the degree to which Google informed pattern hunting and Google informed pattern defining influence EFL learners' writing skills. For instance, elementary level participants might be different from intermediate and advanced participants in terms of their ability to produce language related materials like expository texts (Thomas, 2002). This point has been highlighted by Wu (2010) who points out that because of the constraints of their limited language ability, their writing exhibited a narrow range of vocabulary and few idiomatic expressions. Sentence structure was simple and basic" (Wu, 2010, p.119). Nevertheless, his study was not conducted on direct use of the Web corpus. Since Google provides the translation of learner's language to and from English as well as provides the definition (with synonym, antonym and usage) of almost every word in English, it can be a great advantage in helping the EFL students even those with low proficiency levels.

9. IMPLICATIONS

The findings of the present study hold important pedagogical implications for language learners and syllabus designers.

1. The significant role of the Internet in people's lives is undeniable. Hence, attempt needs to be made to take the most efficient Internet-based techniques for different aspects of our lives. Considering EFL writing as an aspect of our life, the present study suggests two of the effective techniques for enhancing language related skills.
2. It is most suggested to those who are learning English in general and English writing in particular through self-study approach to make use of Google search engine to enhance writing related skills.
3. Course and syllabus designers are also suggested to incorporate Google informed pattern hunting and pattern defining into their language writing courses and syllabi to expose the students to authentic materials.
4. The other implication of the present study is the point that students had the opportunity to be engaged in discovery learning and thinking processes.

10. LIMITATIONS

1. The researchers confined the topic to a limited number of academic extra-curricular activities since examining the effect of all academic extra-curricular activities becomes a complicated task which requires several methods of sampling and testing which seem to be impossible or too time consuming.
2. Second or foreign language writing, as an influential component, was selected to be examined due to the fact that previous studies had mostly investigated the effect of extra-curricular activities (whether academic or non-academic) on the learners' second language development in general. Indeed, the findings could not be generalized to skills other than writing.

11. SUGGESTIONS FOR FURTHER STUDY

Some practical suggestions in the light of our findings are presented which are put forth as follows:

1. First, students' change writing skills as a result of Google informed pattern hunting and Google informed pattern defining might be due to quality factors. Certainly, as for any other variable, there is not a single method and approach to the instruction of writing. Other researchers can draw on different techniques and come to findings which might be different from the findings of this study.
2. Second, short-term results might not be equal to longer-term results. The effects of longer-term practice of Google informed pattern defining and pattern hunting on learners' writing skill needs more attention and exploration.
3. Third, a qualitative investigation of how Google informed pattern hunting and pattern defining results in higher writing skills would help this area of research.
4. Fourth, for studies in the field of ELT, in order to investigate learners' linguistic skill, perception, and attitude there is a need to investigate the interaction between constructs of language (e.g. grammar, vocabulary, reading, writing, etc.) and Google informed pattern hunting and pattern defining. This means that some areas of language like, for

example, Grammar or vocabulary may lend themselves better to developing writing skills through practicing Google informed pattern hunting and pattern defining.

5. Finally, the investigation of the effects of Google informed pattern hunting and Google informed pattern defining on writing skills across gender, proficiency level, and age is yet to be done by other researchers. This would give better understanding about how Google informed pattern hunting and pattern defining functions.

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