

The Impact of Infographics on Iranian EFL Learners' Grammar Learning

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Abstract

Improving grammatical knowledge has always been a major concern to EFL learners, so far much effort, devoted to enhance grammatical knowledge in different methods. Now, it is time to forget the stereotypical methods of grammatical learning which rarely engage the readers' mind in the learning process and focus their attention on utilizing multimedia and visualizations in form of infographics in grammar learning. The present study was designed to explore the impact of infographics instruction on Iranian EFL learners' grammar learning based on the researcher's motivation to find empirical evidences in Iranian English language learners. The grammar instruction was provided through two methods; one, through the infographics instruction, and the other, through routine and traditional techniques. On the basis of the result of paired sample t-test, it was found that infographic instruction was an effective instrument to help EFL learners learn foreign language grammar.

Keywords: grammar learning, visualizations, infographics

INTRODUCTION

In the history of language learning and teaching, there have been changes over teaching grammar. Grammar is known as a set of rules that describes how words and group of words can be arranged to form sentences in a particular language. The grammar of English involves all the rules that govern the formation of English sentences, and that is exactly what learners of English want to know (Cowan, 2008).

In explicit grammar teaching, the rules are explained to learners, or the learners are directed to find the rules by looking at linguistics examples (Cowan, 2008). On the other hand, implicit teaching "makes no overt references to rules or forms" (Doughty, 2003, p. 263). The question is rising in the mind that how grammar should be taught in order to be effective and help learners to pay attention to those rules.

Regarding the significance of grammar in language learning, learners need to use effective and attractive ways rather than boring ways to learn grammar. Among various types of instructional grammar techniques graphic visualizations of materials are welcomed by both teachers and learners. Stokes (1997) believes that visualization continues to gain

ground against traditional textbooks and it helps individuals to have greater transparency in previously unintelligible data. As Hoffler and Leutner (2011) state, “in recent years, the role of individual differences on learning with visual representations has been more and more focused on” (p. 209). Learning styles of students is one area of higher education, which has been given growing attention. Several studies have revealed that academic performance of university students is associated with their learning styles (Aripin, Mahmood, Rohaizad, Yeop, & Anuar, 2008). Thus, as Chung (1996) states, “there were increasing numbers of L2 teaching programs which begin to integrate video materials into their curricula and more attention is being focused on how to make the viewing experience profitable” (p. 61). Concerning the role of technology in general and visualization in particular, it should be emphasized that there has been a foremost shift from traditional approaches to instructional approaches in recent years. Accordingly, visualization is considered as one of the constructive instructional material, which paves the way for more beneficial language learning. Another instructional material and practical metacognitive strategy which should be given a crucial role in the process of language learning is the notion of advanced organizers.

Graphic visualizations are considered as spatial representations of a linear text where ideas, concepts and the connections between them are visibly highlighted by graphic devices such as diagrams, charts and maps. Graphic visualizations vary in appearance even though they all visually represent complex information in simple and meaningful displays. According to Atkinson, Herrnstein, Lindzey, and Duncan Luce (1988), visual text perceived by the biological processing system is converted to linguistic information in the short-term memory and meaning is yielded after repeated transfer of the information between the short and long-term memory systems. Representational graphics have the potential to divide the workload more evenly between the cognitive, attentive, and perceptual systems (Ware, 2004).

An infographic (information graphic) is a representation of information in a graphic format designed to make the data easily understandable at a glance (Tufte, 2001). Informational graphics, or infographics, are one kind of data visualizations that are designed and presented to inform readers. They can be every graphics which is intended to represent data in a meaningful way such as maps, charts, and graphs.

People use infographics to quickly communicate a message, to simplify the presentation of large amounts of data, to see data patterns and relationships, and to monitor changes in variables over time. Infographics abound in almost any public environment, traffic signs, subway maps, tag clouds, musical scores and weather charts are just a few examples, among a huge number of possibilities. In the enterprise, infographics are used by all levels of management for high-level views of data. Infographics include bar graphs, pie charts, histograms, line charts, tree diagrams, mind maps, and network diagrams. Such tools are often components of business intelligence software. As the amount of data being amassed in the enterprise and elsewhere increases, infographics are being used more and more frequently to help people understand the information contained in that

data. Infographics predate writing as a means of disseminating information, cave drawings are probably the earliest known example. People were also creating and using maps before the advent of written language.

Through the long history of using infographics, very scarce number of studies have been done in order to measure their effectiveness in promoting learners' language learning. The present study gained insights from the previous studies and is going to investigate the effectiveness of infographics instruction on Iranian intermediate EFL learners' grammatical knowledge. Although the positive effects of infographics on learning is indispensable, "there is a lack of research to examine what learner and instructional variables can infographics influence student learning especially in academic settings" (Lim & Morris, 2009, p. 283).

This study sought to analyze the effect of infographics on Iranian EFL learners' grammar learning. The following research question was posed:

- Does infographics have any significant effect on Iranian EFL learners' grammar learning?

METHOD

Participants

Participants of this study were 60 Iranian EFL learners of both male ($n = 26$) and female ($n = 34$) who studied English language in language institutes located in the city of Boushehr, Iran. Their age range was between 14 and 24. They were native speakers of Persian language. Their level of English language proficiency was determined through Oxford Placement Test (OPT).

Instruments

This study used all parts of the OPT to select a group of intermediate level L2 students and to figure out the L2 reading proficiency level of the students. The rationale for the selection of the OPT was, firstly, the fact that, in this study, proficiency was considered as an independent variable, thus, the OPT was preferred to select the intermediate level EFL learners. Secondly, this study aimed to separate the elementary, pre-intermediate and intermediate students. To do this, the OPT guideline is provided in the following table.

Infographics were used in this study in order to present grammar to the participants of experimental group. The data were visually represented to help viewers visually interpret that data by color-coding, graphics, icons, statistics, references and facts. In this study, infographics were used to present new grammatical points or controlled practice of new structures, since they attracted learners' attention and made activities more enjoyable. Grammatical structures were taken from the Interchange book. The infographics were used to help students organize ideas, simplify information and describe the relationships between facts and details of grammatical structures.

An achievement test of grammar containing 20 items was designed as a pretest and posttest in this study. It was designed by the researcher based on the contents of instruction in this study. It was given to the participants of both the experimental and control groups at the beginning and the end of the study. It took 30 minutes for learners to answer the questions.

Procedures

Prior to the main study, pilot study was carried out in order to check the reliability of pretest and posttest of the study. A group of 20 EFL learners with almost similar age, sex, and proficiency level was selected to take part in the pilot study.

The main study began with the administration of a language placement test. The participants of this study were homogenized and selected as a result of their performance on OPT. Then, they were randomly assigned into two groups, i.e., one experimental group and one control group.

In experimental group, the teacher initiated the instruction with a brief introduction to the infographic in the first session of the study. The teacher asked the students to brainstorm all the things that they can see going on in the infographics and ask them to make at least 20 different sentences. The participants in the control group were given the traditional deductive (rule-driven) instructional approach, which focused on form first. In order to teach the present tenses, the instructor explains grammatical structures and rules explicitly followed by sample sentences written on the board and practice exercises copied in pieces of paper. At the end of the study, the participants of both experimental and control groups took posttest that covered all of the grammatical structures studied throughout the semester.

RESULTS

Descriptive statistics of pilot test on pretest and posttest, such as mean, standard deviation (SD) and the item facility (IF) index of the test items are provided in Table 1.

Table 1. Descriptive statistics of the pilot study on pretest and posttest

	Mean	SD	IF < 0.33	0.33 ≤ IF ≤ 0.63	IF > 0.63
Pretest & Posttest	25.8	6.71	2	17	1

In order to test the reliability of the tests, Cronbach's alpha analysis was performed, and, according to Farhady (1995), the results ($r = 0.82$) indicated that the pretest (and posttest) had a satisfactory level of reliability (see Table 2).

Table 2. Reliability Statistics of the Pretest and Posttest

	Cronbach's Alpha	N of Items
Pretest and Posttest	.82	20

The descriptive statistics of participants' performance on pretest is provided in Table 3.

Table 3. Descriptive statistics of participants' scores on pretest

		N	Minimum	Maximum	Mean	Std. Deviation
Pretest	Control	30	3	13	7.63	2.69
	Experimental	30	6	14	8.76	3.64

In order to ensure that there is no significant difference between the control and experimental groups regarding their grammatical knowledge, an independent samples t-test was performed. The results are shown in Table 4.

Table 4. Independent samples t-test of groups' performance on pretest

		Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	95% Lower	95% Upper
Scores on Pretest	Equal variances assumed	.216	.176	.846	58	.353	.93333	.99751	-1.06	2.930

The results indicated that that there is no statistical significant difference between the control and experimental groups in their performance on pretest. The descriptive statistics of both groups are compared with each other in Table 5.

Table 5. Descriptive statistics of participants' performance on posttest

	N	Minimum	Maximum	Mean	Std. Deviation
Posttest (Experimental Group)	30	10	18	14.33	2.368
Posttest (Control Group)	30	7	15	10.30	2.168

In order to verify the research question of the study, a paired samples t-test was performed between the experimental group's performance on pretest and posttest. The results are provided in Table 6.

Table 6. Paired samples t-test on pretest and posttest of experimental group

		Paired Differences					T	df	Sig.
		Mean	Std. Deviation	Std. Error	95% Confidence Interval				
				Mean	Lower	Upper			
Pair 1	Posttest-Pretest	6.857	1.987	.336	6.174	7.540	20.413	29	.000

The results showed that that there is a statistical significant difference between the pretest and posttest scores of the participants of experimental group. In the other words, training on the use of infographics significantly enhanced EFL learners' grammatical knowledge. Therefore, the research question of the study was verified.

DISCUSSION AND CONCLUSION

The results of the present study will support those of Hegarty (2004) who found that creating documents that allow students to browse the information in any order was more useful than being constrained by the linear ordering of information in printed books.

Also, the findings of the present study were in line with a number of previous studies done by Hasler, Kersten, and Sweller, (2007), Mayer and Chandler (2001) and Moreno (2007) carrying out studies concerning the superiority of animation over static graphics indicated that if additional supporting strategies incorporated into animations, animations would become more effective.

This study confirmed the results of Mayer and Moreno (2002) who examined the role of animation visualization in multimedia learning including multimedia instructional messages and micro world games.

The findings of the present study support those of Ghaderi and Afshinfar (2014) who investigated the effect of using animated versus static funny pictures on Iranian intermediate EFL learners' intake and retention of English idioms. They found that using animated funny pictures could enhance intermediate students' intake and retention of idioms.

The results of this study corroborated with those of Sadeghi and Farzizadeh (2013) who investigated the vocabulary learning gains of beginner EFL learners using the application of visual aids in experimental group and the traditional technique of definition in control group. The results indicated the experimental group outperformed significantly better than the control group in the post-test. The results offer a wealth of opportunity for teachers to experience the visual-supported approach to teaching vocabulary.

The impact of infographic provides interesting facts from the research on how teachers can impact the lives of students. The results of the study indicated that the use of infographic along with current teaching methodologies is effective in improving grammar learning of Iranian EFL learners. Participating in a class in which infographic instruction is predated helped learners improve their grammatical knowledge.

The results of this study proved that teaching grammar items while using infographic instruction would lead to better comprehension among EFL learners. Infographic instruction increased the motivation of learners to improve their grammatical knowledge as they experienced different ways to learn vocabulary items. In addition to the fact that infographic instruction was innovative for the participants of the study, it could provide opportunities for them to be more successful in their grammar learning.

This study might have clarified some issues attributable to some infographic activities in terms of collaborative and cooperative learning techniques in addition to their effects on EFL learners' language learning.

From theoretical point of view, this study represented an infographic instruction, i.e., integrating infographics into traditional teaching strategies, as one of the effective and interesting ways for improving grammatical knowledge of EFL learners. It also provides the best conditions for learners to learn grammatical points profoundly and to extend their knowledge of grammar.

The application of blended instruction, from a pedagogical point of view, presented helpful insights for EFL teachers, EFL learners and syllabus designers. Syllabus designers can also integrate software programs, such as the one constructed and applied in the present study, in their products to bring variety, create multipurpose productions, and prepare textbooks which do not need instructors and can be used in students' self-studies.

The findings of this study would help the EFL teachers to get insights to design and adapt language learning materials for enhancing grammatical knowledge of participants. Furthermore, as the current grammar learning activities take the teacher's energy and most of the class time, the task of grammar instruction could be presented through infographic instruction framework.

The findings of the present study can have implications for learners as well. The infographic instruction provides opportunities for the use of collaborative activities, students can enjoy the learning process effortlessly. In this way, they can prepare themselves for performing the main task properly. They may also learn how to examine the problems carefully, find solutions to the problems, choose the best solution, cooperate with the other group members, hold responsibilities, share their knowledge and responsibilities, and if their teacher tells them they have done a good job, they will develop the habit of working hard.

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