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Word Clouds in Grammar Production

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Abstract

In the last two decades, technological developments have transformed expectations of the societies and communities including education. Using technology in education in general and in language teaching in particular has proved to have lots of benefits to both students and teachers. This study aimed at examining the effectiveness of a data visualization technology –word cloud- in grammar production as well as EFL learners' perceptions towards using this technology in grammar production activities. 38 intermediate levels high school students participated in the study. The participants were divided into two groups as the experiment as the experiment and the control. Three sets of worksheets and an open ended questionnaire were used for data collection. The independent sample t-test revealed no statistical difference between the two groups. However, descriptive statistics showed that the experiment group performed slightly better than the control. This was attributed to the scaffolding, noticing and elaborating effect of the word clouds. Overall, the participants stated that word cloud activities were useful and fun. It was concluded that word cloud may be a practical alternative in teaching grammar.

Keywords: Grammar, word cloud, grammar production, using technology, ICT.

Introduction

Countries trying to be active players in the international arena are adopting strategies and policies to support their development. Education is regarded as a vital part of this transformation since it is considered as an engine for socio-economic development, a source of developing basic skills and bases for development of innovation and new knowledge. Parallel to the changes in the requirements of the societies, the expectations from the educational institutions have been changing. In this context, ICT has become integral part of the educational institutes, and thus it has

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become a must for students to master ICT skills to be a qualified member of the society (Voogt, 2012). To fulfil these expectations, most classrooms all over the world have been transformed into interactive learning environments equipped with technological devices such as computers, interactive whiteboards, internet communication, overhead projectors and tablets. In other words, education has moved into a digital age. Educational activities have changed to engage the latest digital technologies. The instruction has been changed into a mixture of face-to-face education and some means of virtual tools and the content has progressed from traditional text-based learning to multimedia-enhanced texts. Considering that the field of language teaching is a multidisciplinary field requiring the implementation of resourceful technological instructional tools and that we are living in a world in which a myriad of technological tools is available for use in language teaching and learning, it is almost unbearable for the field of language teaching to resist technologisation movement (Motteram, 2013). We are now living in a world where digital technologies have normalised and have become central to language practice (Bax, 2011). Therefore, as Kern (2006) claims the point of discussing whether we use computers and technology in language learning and teaching or not has been passed. As a result of the spread of technology, language teachers have recognised the requirement to adjust their practice to reflect the changing nature of technological use (Pim, 2013). Consequently, teachers all over the world are now reconsidering what they are doing in classroom as well as frequently making use of different technologies to promote their students' learning (Stanley, 2013). Teaching grammar is an area that has been frequently investigated. However, despite the remarkable changes in approaches and methods used in language teaching and learning, language teachers still need to deal with the issue of grammar instruction (Ellis, 2006). Although teachers were restricted to a limited number of options in the past, the technology, especially Web 2.0 tools, offers many alternatives for grammar teaching. Teachers now have the freedom to generate their own material using different Web 2.0 tools such as instructional movies, animation software and audio editing tools. That is to say, instead of a drill and practice methodology and through controlled speaking and writing exercises offered by the course books (Richards & Reppen, 2014), a variety of alternatives which contextualise the language items are available for teachers. In this sense, the aim of this study was to investigate whether the use of a data visualisation technology, word cloud, can be used to facilitate grammar production.

Data Visualization

Data visualisation has been used in a plenty of fields as a way to present information in a clearer end more effective way through visual presentation (Friendly, 2008). Data visualisation can be defined as the utilisation of tools that describe data in any graphical means such as charts, maps, tag clouds and animation in order to facilitate the interpretation of data (Barret, 2010). The paramount purpose of the data visualisation is to help readers analyse and construe significant amount of data by making them more accessible, understandable and usable (Friedman, 2008). With the advancements in technology, data visualisation tools have surpassed such traditional tools as charts and graphs and now numerous sophisticated data visualisation tools is available for use. These tools potentially make the comprehension of complex issues or phenomena easier since data is presented in a multimodal way in which visual, textual or animated data may be incorporated. As a result of these benefits, data visualisation technology has attracted researchers from multiple disciplines.

Word Cloud

A word cloud, one of the most widely held data visualization technology, is simply a visual representation of text data. The size of the words in a word cloud is determined by the frequency of their appearance throughout the text. The size of the word in the cloud gets larger with the increase in the frequency of that word. The frequency of a word appears in the visual in accordance with its font size which makes the most frequent words salient in the word cloud. With the flourishment of Web 2.0 tools, word cloud technology has become radically accessible to public with a great number of free word cloud tools available on the Internet. An ordinary user can easily produce a word cloud just by copying the text and pasting it into the website. Besides, most of the tools offer modification options such as changing the font, shape and colour of the word cloud. Figure 1 shows an example of word cloud:

Word cloud technology is used in many disciplines including language learning and teaching for its simplicity and visually appealing results (Pendergast, 2010). Word cloud is fun, visual and entertaining and thus motivating (Feienberg, 2009). Word cloud can be used for

instructional purposes without much requirement. A computer and projector is enough for utilising word cloud technology in classroom instruction. Word cloud technology may also be an alternative to PowerPoint which is considered as not effective anymore. These types of activities encourage students to react to topics or concepts and produce their own understanding based on that reaction.

Nevertheless, only a small number of studies investigated the use of word clouds. For example, Ramsden and Bate (2008) investigated the potential use of word clouds in teaching and learning and concluded that word clouds may be beneficial both for learners and teachers. In a study in which they used a word cloud tool, McNaught and Lam (2010), argued that word clouds may be used as supplementary research tools for data triangulation. In another study, originating what she described as a "folksonomy" of texts, Pendergast (2010) used "tag clouds" in order to analyse the most commonly used terms in documents published by the American Association for Family and Consumer Sciences (AAFCS). She argued that the word clouds divulged a visual hierarchy of text and that tag clouds should be included on Websites next to the published documents which, according to Pendergast, would be appealing to multiple generations. Finally Baralt, Pennestri and Selvandin (2011) have conducted an action research on using word cloud to teach foreign language writing within dual coding hypothesis framework. They argued that using word clouds can facilitate the teaching of foreign language writing.

Word cloud technology can improve the quality of language teaching. The integration of word cloud into classroom acts as an instructional tool that facilitates the use of more diverse vocabulary in new contexts. However, in most cases, the use of word clouds in language learning and teaching is limited to pre phases of lessons in which they are used to introduce the topic and encourage generating of ideas (McDonough, 2011). A typical use of word cloud in language instruction is that teacher projects or prints the word cloud and use it to start a conversation in which the aim is at doing a brainstorming activity and predicting the topic of the lesson. This study goes beyond the traditional use of word clouds and tries to explore its efficacy in grammar production activities.

Teaching Grammar

The issue of grammar teaching has always received a great amount of attention from researchers whose aim has been at improving the practice. With regard to this aim, researchers has developed several hypothesis related to grammar instruction. Some proposed that we should not

teach grammar since it has limited effect on the natural acquisition of language for which considerable amount of comprehensible input is required (Krashen 1981) whereas others claimed that, rather than prohibiting it, the grammar teaching should be performed in way that does not disrupted the natural acquisition process (Mackey & Goo 2007). Taking the latter position, Long (1991) coined the term "focus on form" over "focus on forms" to indicate that learners' attention should be directed to grammatical whilst they are communicating. He argued that instead of overt use of explicit grammar explanations, teachers should make the input more comprehensible by means of "interactional modifications". Another strand of research pertained to whether grammar rules should be given to the students "explicitly" or the rules should remain "implicit" in the text (Norris & Ortega, 2000). Regarding the another issue, researchers investigated the source of the rules and sought answer to the question whether rules are learnt best when they are given "deductively" by teachers or when they are solved by students "inductively" (Spada & Lightbown 2008).

Nevertheless, it seems that grammar instruction has been, to some extent, unaffected by the findings (Larsen Freeman, 2015) and for the most part, grammar is still being taught in traditional ways with a focus on accuracy of form and rule learning using mechanical exercises which are regarded as the way to facilitate the learning of grammar (Jean & Simard 2011). Besides, the learning of grammar is a complex, multifaceted, and lengthy process in which no single pedagogical approach may claim priority in teaching (Ellis & Shintani, 2014). Grammar teaching approaches should admit that learners may have different learning styles and preferences while they are learning grammar (Richards & Reppen, 2014).

Research Questions

It is clear from the aforementioned debate that there is not a single formula for successful grammar learning and what may work in one specific setting may be useless in another. With an aim to contribute the diversity of instructional techniques and tools used in grammar teaching and learning, this study goes beyond the common uses of word cloud technology in language learning

and teaching and tries to examine its efficacy in grammar teaching by seeking answers to the following research questions:

1. To what extent using word cloud technology facilitates EFL learners' grammar production skills?

2. What are the perceptions of EFL learners towards using word clouds in grammar learning?

Methodology

Design

A quasi-experimental design was used to investigate the effectiveness of word cloud tools in grammar production. Data were collected from 38 high school students (experiment: 18; control: 20) through three worksheets to explore the efficacy of using word clouds in grammar production. The experiment group were asked to complete three grammar production activities in which word clouds are used. On the hand, the control group was supposed to complete picture-cued grammar production activities. A post reflection questionnaire which can be found in Appendix D was also administered to obtain the perceptions of the participants.

Participants

The present study was carried out in a Turkish high school. Using convenience sampling technique, two classes were selected as the sample of the study. Thirty-eight (22 female, 16 male) eleventh-grade intermediate level students participated in the study. One of the classes was randomly selected as the experiment group. The experiment group consisted of 18 participants whereas there were 20 participants in the control group. They were all between 16 and 17 years old and had been learning English for 9 years when the study was carried out. They had 4 hours of English instruction as a part of regular curriculum as well as 2 hours of out of class instruction as a supplement in which they were also following the regular curriculum.

Materials

The materials used in the present study were prepared by the researchers. Before preparing the activities the researchers interviewed the teacher in order to obtain some information regarding the classes and to ascertain the grammar topics to be investigated. As a result, three grammar topics were selected: the comparatives, the Simple Past Tense and the Imperatives and the preparation process began. The selection of topics was based on the criteria that the topic had to be introduced

before the study since the study would focus on the production of grammar. The details of the topics can be found in Table 1. Two sets of worksheets for each topic were prepared. For experimental group, researchers used semi-authentic texts which were published online. The website www.worditout.com was used to generate the word clouds. For control group, researchers downloaded photos and prepared picture-cued worksheets. The maximum score participants could get in the activities was 100. The worksheets were assessed both by teacher and researchers using a rubric (see Appendix C). The samples of worksheets can be seen in Appendix A and Appendix B.

Table 1. The Topics used in the Study

	Grammar topic	Function
Activity 1	The comparatives	comparing to well-known cities
Activity 2	The Simple Past Tense	writing a story
Activity 3	The Imperatives	giving a recipe

Data Collection and Analysis

Data were collected in a two-week period. First the worksheets were prepared and sent to the teacher via e-mail. The teacher then administered the worksheets as a regular part of her classroom practice. Since the teachers met each class two times a week and the participants were required to complete one activity in each meeting, the data collection procedure took two weeks. After all of the activities were completed, an open-ended questionnaire was applied to experiment group in order to get their reflections on the activities. Data were analysed in two steps. In the first step, the teachers assessed the worksheets and sent them to researchers via mail. In the second step, the researchers re-assessed the activities using a rubric and coded to SPSS package program for further analysis.

Results and Discussion

The Efficacy of the Word Cloud in Grammar Teaching

Mean scores of the participants are presented in Table 2 below. The results showed that the performances of the participants in both groups were almost similar for all of the activities. Table 3 presents the independent sample t-test results. It can be seen in Table 3 that there was no significant difference between word cloud group and picture-cued group for all of the activities. However the word cloud group performed slightly better than the picture-cued group. This result may be attributed to the scaffolding effect of the word cloud which was also reflected by the participants in open ended questionnaire. They claimed that seeing the words facilitated their grammar knowledge and led them to produce more grammatically correct sentences. This may be interpreted as that word cloud enabled the participants to notice the grammar which according to Schmidt (1990) is required for learning to occur. The statements of the participants suggested that the use of word clouds in grammar teaching may potentially contribute to the transformation of the grammatical knowledge into grammatical ability (Jones, 2012).

Table 2. Mean Scores of the participants

		Mean	Std. Deviation
Experiment	The Comparatives	79,16	12,97
	The Simple Past Tense	75,55	11,36
	The Imperatives	75,27	9,9
Control	The Comparatives	78,75	12,96
	The Simple Past Tense	71,5	10,89
	The Imperatives	72,75	13,52

The participants also stated that word cloud significantly contributed to their lexical knowledge which may be considered as another benefit of using word clouds in grammar teaching.

They expressed that they had learnt a great deal of new vocabulary items while dealing with word cloud activity which was, in essence, a grammar production. In this sense, it can be claimed that using word clouds as grammar production activities also contributes to incidental vocabulary learning since those items were learnt as by-products of another activity (Gass & Selinker, 2008).

The Perceptions of the Participants towards Word Cloud

The participants' answers to reflection questions revealed that they did not have any difficulty while completing the activities and found word cloud activities fun. One of participants stated that:

"There is nothing that struggled me in the activities. On the contrary they were quite fun and I enjoyed doing them"

(Participant 9)

Table 3. Independent Sample T-Test Results

		N	Mean	Sig.
The Comparatives	Experiment	18	79,16	.92
	Control	20	78,75	
The Simple Past Tense	Experiment	18	75,55	.27
	Control	20	71,5	
The Imperatives	Experiment	18	75,27	.51
	Control	20	72,5	

The participants regarded comparing two cities as the most challenging activity as completing that activity required background knowledge about the cities. It seems that participants who lacked that knowledge had some difficulty in doing the activity. Another issue revealed in the reflections is that students were attracted by the activities which were of their interest. Most of the female participants expressed that they had liked the imperatives activity mostly due to the fact that they loved cooking whereas some of the male participants said that it was demanding to complete the same activity as they did not how to cook. This is an issue which should be borne in mind while

preparing activities for students. Keeping the interests of their students in mind, teachers can prepare more engaging activities for their students.

The last ground covered by the participants is that word clouds improved their writing abilities. They uttered that as they were provided with the words, they used these words productively in the activities which made them feel more comfortable while writing the story and giving the recipe. This may be interpreted as "elaborating" which is referred as helping learners improve their grammatical sources with activities that require students to expand the piece of information included in the text and in turn force them to use more complicated grammatical elements (Jones and Lock, 2011).

Conclusion

The aim of this paper was to investigate the efficacy of word cloud technology in grammar production and the perceptions of the EFL learners' using towards using word clouds in grammar production. For this reason, three sets of worksheets were prepared. While the experiment group were asked to complete the word cloud activities, the control group were provided with picture-cued grammar production activities. Statistical analysis revealed that although there were no statistical differences between groups for the activities, the word cloud group slightly surpassed the picture-cued group. According to the reflection questionnaire, the participants found word clouds useful and fun. They also stated that using word clouds in grammar production contributed to their lexical knowledge and writing skills. In the light of these findings, it can be said that using word clouds in grammar production may be a useful alternative for teachers who seek for different ways of teaching grammar. However, this study has some limitations. First it was carried out with intermediate level high school students who had developed a considerable amount of background knowledge which may affect the findings of the present study. Therefore, further research should focus on using word clouds in teaching grammar to young learners. Second, the number of the participants was limited in this study. A replication of this kind of study with more participants would contribute the debate. Finally, this study covered only three grammar topics. The studies covering more and different grammatical features are needed in the field.

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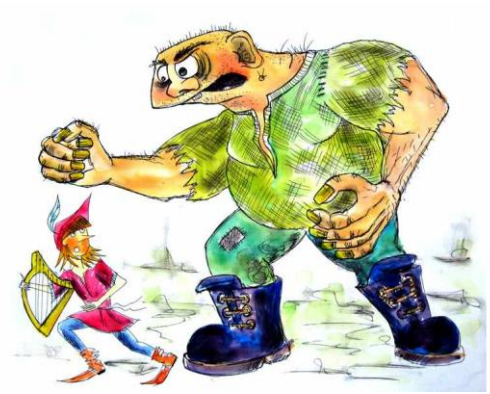
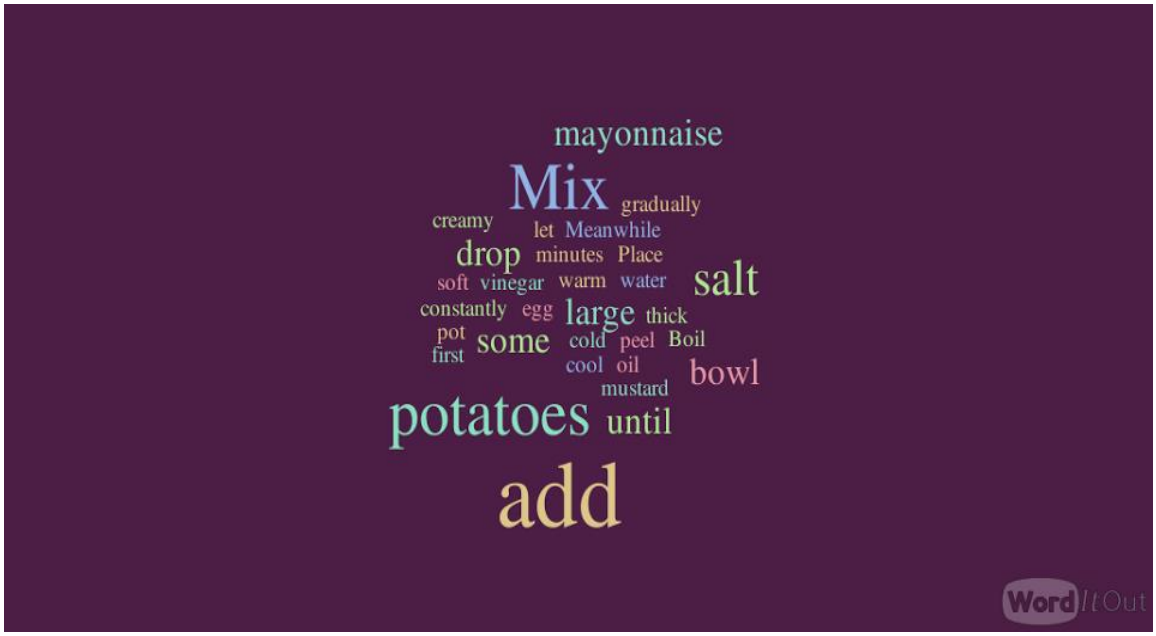
APPENDIX A – Sample Word Cloud Activity

Look at the pictures below and use the words to generate ideas. Please write a story using the Simple Past Tense



APPENDIX B – Sample Picture-Cued Activity

Look at the Word Cloud below and use the words to generate ideas. Please give the instructions of the recipe.



APPENDIX C – Grammar Rubric

CATEGORY	Excellent 25 pts	Proficient 20 pts	Developing 15 pts	Attempting 10 pts
PRODUCTION	Excellent Produces majority of signs and fingerspelled words correctly and signs clearly; no major production errors	Proficient Produces most of the signs and fingerspelled words correctly and signs clearly	Developing Signs clearly; misproduces some signs and fingerspelled words	Attempting Difficult to understand, is struggling or misproduces most signs (more than 5 serious errors)
VOCABULARY	Excellent Appropriately uses correct vocabulary	Proficient Appropriately uses correct vocabulary most of the time	Developing Sometimes appropriately uses correct vocabulary and grammar	Attempting Rarely uses or doesn't appropriately use correct vocabulary and grammar (more than 5 serious errors)
GRAMMAR	Excellent Appropriately uses correct grammar (verb & spatial agreement, facial expressions, etc)	Proficient Appropriately uses correct grammar most of the time	Developing Sometimes appropriately uses correct grammar	Attempting Rarely uses or doesn't appropriately use correct grammar (more than 5 serious errors)
COMPLETE SENTENCES	Excellent Always signs in complete sentences.	Proficient Mostly signs in complete sentences.	Developing Sometimes signs in complete sentences.	Attempting Rarely signs in complete sentences.

APPENDIX D – Open Ended Questionnaire for Reflection

1- Did you like the Word cloud activities?

2- When compared to other language activities in the class, what do you think about using the Word cloud in grammar production?

3- What was the most challenging part of the Word cloud activities for you?

4- What was the most useful part of the Word cloud activities for you?

5- Do you feel that you build your confidence in learning a grammar?