

The Implementation of Corpus-aided Discovery Learning in English Grammar Pedagogy

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The present study presents the instructional procedures of the implementation of corpus-aided discovery learning and the extent to which corpus-aided discovery learning can create motivating and successful English grammar learning environment for EFL (English as a Foreign Language) students. Corpora promotes inductive learning in terms of that students not only acquire grammar by language data, observation and self-discovery of rules, but also find it entertaining and exciting to make grammar rule generalization on their own (Cheng, 2011; Hunston, 2002). Drawing on data of a questionnaire and an interview, the students recounted that incorporating corpus-informed data into grammar learning was very satisfying and useful, and students can be sure that the language they are practicing is up-to-date, used in everyday situations. It is not artificial or invented language but consists of the most widely used grammar (McCarthy, 2004). In addition, language corpora helped students to learn about certain language uses that were not available in any of the traditional tools. Another finding shows that students understood how certain language forms were used by native speakers of English, and students revealed more positive attitude toward corpus in learning English grammar. The findings imply that corpus-informed data can be a means of encouraging autonomous learning, illustrating real uses of abstract rules, presenting authentic daily grammar, and promoting exploratory inductive learning. However, some students, especially inexperienced students, found learning grammar through corpus-informed data was difficult or boring.

Keywords: corpus-aided discovery learning, English grammar learning, inductive learning

Penelitian ini menginvestigasi penerapan corpus-aided discovery learning (CADL) dan melihat sejauh mana CADL dapat meningkatkan motivasi demi keberhasilan pembelajaran

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grammar dalam konteks EFL (Bahasa Inggris sebagai bahasa asing). Corpora mempromosikan pembelajaran induktif dimana siswa tidak hanya memperoleh pengetahuan grammar dari bahasa dan observasi tetapi juga dengan cara menyenangkan sehingga mereka dapat menyimpulkan aturan grammar sendiri (Cheng, 2011; Hunston, 2002). Data yang diperoleh dari questionnaire dan wawancara menunjukkan bahwa pembelajaran grammar melalui corpus sangat menyenangkan, dan siswa percaya bahwa bahasa yang mereka pelajari up-to-date. Corpus bukan bahasa semu tetapi bahasa yang memuat grammar yang paling sering digunakan (McCarthy, 2004). Selain itu, corpus membantu siswa mempelajari penggunaan kata tertentu yang tidak ditemukan pada media tradisional. Penemuan lain menunjukkan bahwa siswa dapat mengerti bagaimana bahasa yang digunakan oleh penutur asli bahasa Inggris, dan mereka memiliki kesan yang positif terhadap pembelajaran grammar. Penemuan studi ini dapat dimaknai bahwa corpus dapat mendorong siswa mandiri, menyajikan materi otentik, dan mendorong pembelajaran induktif. Namun, siswa yang berada di level bawah mengatakan bahwa pembelajaran grammar melalui corpus sulit dan membosankan.

INTRODUCTION

In the context of Indonesian College English classes, the onus of grammar instruction is still placed on deductive approach in which students are provided the grammar rules and examples, told to memorize them, and then asked to apply the rules to other examples (Widodo, 2006). In this style, teachers mainly focus their instruction on presenting grammatical rules through a series of lecture. In other words, grammar teaching centers on accuracy of form and rule learning with mechanical exercises seen as the way to bring about the learning of grammar (Jean & Simard, 2011).

As a result, with this style students of English as a Foreign Language (EFL) can be easily bored with learning grammar. It not only makes grammar learning passive and uninteresting but also weakens students' ability to develop a clear understanding of context-appropriate use of grammar (Liu, 2011). For example, the teaching and the strict enforcement of certain prescriptive grammar rules, such as "no sentence-initial use of *and/but*" rule, have caused some students to consistently follow these rules regardless of context. Such teaching practices also make students less willing to allow grammatical choices that, according to Kolln and Gray (2009), are not only available but also necessary for effective communication. Micciche (2004) argues that current grammar instruction in college writing classes is in general "not empowering but disempowering, not rhetorical but decontextualized, not progressive but remedial" (p. 718).

A lot of research has concurred that there is a positive function of grammar in foreign language learning. Celce-Murcia (1991) states that grammar instruction is part of language teaching since grammar interacts with meaning, social function, or discourse – or a combination of these – rather than standing alone as an autonomous system to be learned for its own sake. Besides this, grammar can provide the foundation for a set of language skills: listening, speaking, reading and writing.

In listening and speaking, grammar plays an essential role in grasping and expressing spoken language (e.g. expression) since learning the grammar of a language is considered necessary to acquire the capability of producing grammatically acceptable utterances. In reading, grammar enables students to comprehend sentences inter-related in a paragraph, passage, or text. In the context of writing, grammar allows the students to put their ideas into intelligible sentences so that they can successfully communicate in written form. Lastly, in the

case of vocabulary, grammar provides a pathway to students how some lexical items should be combined into a good sentence so that meaningful and communicative statements or expressions can be formed. (Widodo, 2006).

In addition, Long and Richards (as cited in Widodo, 2006) add that grammar plays a critical role in the four language skills and vocabulary to establish communicative tasks. Furthermore, Hinkel and Fotos (2002) argue that grammar teaching can enhance learners' proficiency and accuracy and facilitate the internalization of its syntactic system. On the contrary, Larsen-Freeman (as cited in Nan, 2015) comments that some scholars think grammar teaching has little value for natural language acquisition process, and learning grammar rules and practicing them are only of marginal value (Krashen, 1991, 2011) because it would not develop learners' grammatical competence.

One of the ways of teaching grammar is using language corpora and concordance lines. Language corpora have been considered as one of the most effective, accurate, and modern tools in language research and applied linguistics (Cheng, 2011; O'Keeffe, McCarthy & Carter, 2007). Over the past 25 years, corpora, corpus tools and corpus evidence have not only been used as a basis for linguistic research but also in the teaching and learning of languages (Campoy, Cubillo, Belles-Fortuno & Gea-Valor, 2010). "It is no exaggeration to say that corpora, and the study of corpora, have revolutionized the study of language and of the application of language..." (Hunston, 2002, p.1). Corpus linguistics is viewed as a methodology, comprising several relevant methods used in the investigation of language in different aspects, for example, sociolinguistics, syntax, semantics, pragmatics, discourse analysis etc. (Linguist, 2009).

A corpus (plural corpora) deals with "a collection of texts, written or spoken, usually stored in a computer database" (O'Keeffe et al, 2007, p.1). Similarly, Reppen (2010) defines a corpus as "a large principled collection of naturally occurring texts (written or spoken) stored electronically" (p.2). A corpus, then is simply a large collection of texts that can be analyzed using computer software. It not a theory of language learning or teaching methodology, but it does influence our way of thinking about language and the kinds of texts and examples we use in language teaching (O'Keeffe, et al., 2007). Some teachers see corpus-based pedagogies as a means of encouraging independent learning, illustrating real uses of abstract rules, presenting authentic everyday grammar, and promoting exploratory inductive learning (Sardinha, 2012).

A concordance is a screen display or printout of a chosen word or phrase in its different contexts, with that word or phrase arranged down the center of the display along with the text that comes before and after it (O'Keeffe et al, 2007). Figure 1 (adopted from O'Keeffe et al, 2007, p.13) shows an example of a concordance for the word *yet* in the spoken Corpus. This is typical of what people who study corpora see on their computer screen. The user can look at screen after screen, and see all the different occasions in which the speaker in the Corpus have used *yet*, all together in one concordance. This screen shows a random sample of contexts for *yet*. Each line represents a different occasion of use, by a different speaker, at a different time and in a different place.

At first, the picture looks confusing. We see code such <1>, <2>, etc. Each speaker in every conversation is numbered one, two, three, etc. However, as we look down each of these uses we see a clear pattern emerging. The overwhelming majority of uses of *yet* are in negative contexts and question marks. So the use of *yet* in negatives and in questions is an important

piece of information that materials writers can take and use in grammar materials. In this way, the materials can focus on the most central, frequent, and consequently useful aspects of a word or phrase.

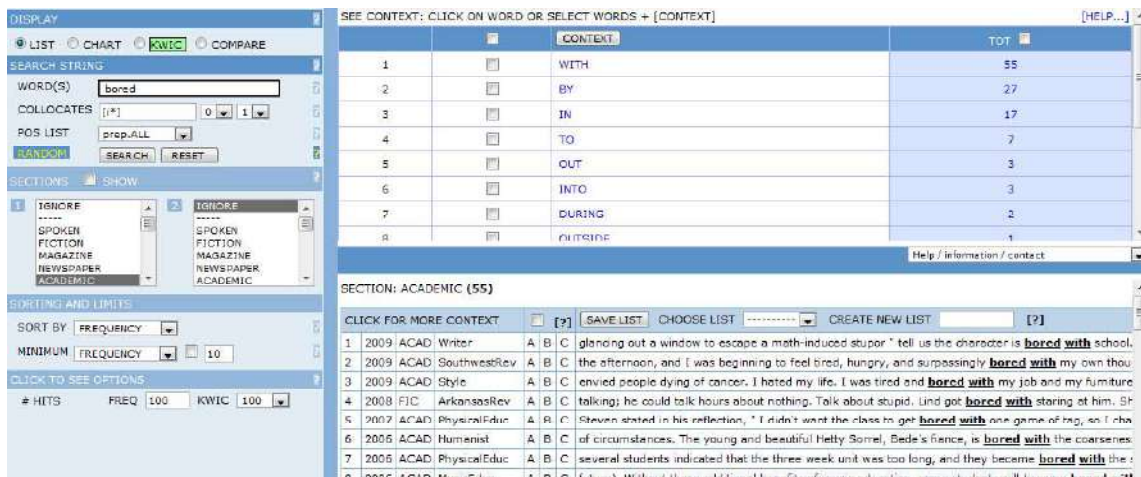
We also notice that the words before *yet* are arranged alphabetically, with words beginning with “a” first (*apartment, applied, argument*), then down through the alphabet. This concordance is “left-sorted.” We can also resort the concordance to alphabetize the words to the right of *yet*. This would bring together all the *a-words* (**and, are**) following *yet*, then all the *b-words* (**because, been, and but**) and so on. Sorting is a useful tool for textbook writers as it gives us the chance to see patterns around words.

Figure 1: A concordance of ‘yet’ from the Cambridge International Corpus

1	that.	<2> I don't	have an apartment	yet	but I will starting in October.	
2	Washington	that's why I haven't	applied	yet	because because of the competition.	
3	If you haven't	fleshed out the argument		yet	you know then that's what we'	
4	in the morning	and I wasn't	even awake	yet	and uh someone who was staying over	
5	<2> Hmm.	Did you play the Carmen CD		yet	mom at all or..? <3> No. <2> N	
6	you just I don't	know. Not	comfortable	yet	but then I became very comfortable t	
7	And uh prices	don't	seem much different	yet	but you just wait 'til January and w	
8	s well. <1>	Did you have your dinner		yet	Thelma or not? <5> No. Not yet.	
9	re. <1>	We're not	ready to do dinner	yet	are we? <2> No. <1> Do you wan	
10	ade it. I didn't	look at the directions		yet	but... <1> Oh okay. <4> It loo	
11	ke every you	know. <1>	He didn't	eat	yet	did he? <2> No I'm holding him.
12	gets gets	bigger but it	doesn't	explode	yet	because all that energy hasn't been
13	hat one	doesn't	get the get the flowers	yet	either. <1> No. <2> Maybe it's	
14	hem in a dark	room. And it	didn't	grow.	Yet	my bagels on the counter molded wit
15	ix of the teachers	because there	hasn't		yet	been one and... <2> Is there a li
16	even know	but we're here	now and I have	yet	to eat anything. <5> Or whatever	
17	me constraint.	We don't	know what it is	yet	cause we don't know how long it's go	
18	out yet and they	don't	know what it is	yet	cause it could mean that something's	
19	omen's size	eight. I'm not	done with it	yet	though. I've got to do the other one	
20	oned it yet. <2>	He hasn't	signed it	yet	and I'd like to add that clause about	
21	now if... I don't	think she'll	start it	yet.	I don't know. She may. If she says	
22	happen. You	don't... I haven't	seen it	yet	but it doesn't mean I never will. If	
23	m not	ready to give up	on the idea just	yet	because it seems like there's someth	
24	mini write up	for those who	don't	know	yet	is like two paragraphs. Let's say yo
25	b things to these	two but we	don't	know	yet	right? <2> Yeah. Well we... He di
26	s before the prom	still hasn't	asked me	yet	and I'm sitting there like what and	

The corpus itself is a pool of information about a language or aspect of a language from which a variety of understanding can be made (Spiri, 2012). McCarten (as cited in Spiri, 2012) lists several aspect of a language that teachers and learners can understand more deeply by making use of corpora. Such aspects include: “frequency, differences in speaking and writing, contexts of use, collocation, grammatical patterns, and strategic use of vocabulary” (p.3). Furthermore, Yanto & Kwary (2012) explained that in every English class, it is not uncommon to find some students who raise critical questions that need descriptive instead of prescriptive answers. For example, consider a student who looks up the prepositions of the word *bored* in OALD8, and he/she is not satisfied with the information given in the dictionary. OALD8 only states that the word *bored* is followed by the preposition *with*. Nevertheless, this critical student thinks that he/she has seen somewhere in the internet that the word *bored* can be followed by other prepositions. In responding to this, we can use corpus tools to provide descriptive answers. If we want to show them how the word *bored* is actually used in the American English, we can use the *Corpus of Contemporary American English* (COCA) which is available for free.

Figure 2: COCA search result for the word 'bored' followed by prepositions



A concordance program, also called a concordancer, is an essential tool for corpus linguistics to search for target words in a corpus and generate analyses of the words. The program not only produces concordances, but also provides a range of text analysis, such as frequency information and collocation patterns. In other words, these tools extract out instances of words or tags (or sequences of words/tags), and present them to the users, as can be seen in the figure 3 below:

Figure 3: A concordance for the word 'however'

1 sing itself to such possibilities, **however** , A Bend in the River, for all its a
2 rine of diminished responsibility. **However** , a central element in the common-la
3 targets by wearing a Celtic scarf. **However** , a closer look at the supposedly mo
4 probably unhelpful (Simpson 1976). **However** , a cognitive therapy approach to he
5 . Even apart from such exceptions, **however** , a contract not made in the require
6 ischarge in that area. More often, **however** , a discharge will have been noticed
7 ferent countries. From 1860 on, **however** , a dramatic increase in the number
8 ient in committing suicide. It is, **however** , a fine line. between aiding suicid
9 eir anthropology. It also implied, **however** , a further difference from the earl
10 may well seem perverse. There is, **however** , a good deal of information in the
11 ir and construction of body cells. **However** , a high-protein diet need not be ex
12 cribed to mere accident. There is, **however** , a large variety of killings which
13 ndment Act to be unconstitutional. **However** , a law dealing with the national si

Regarding grammar teaching approach through concordance line, it can be distinguished into corpus-based, corpus-driven, and corpus-informed (McCarthy, 2004). In a corpus-based approach, structures or patterns to be taught are identified in a top-down direction; they are decided by reference to a particular theory, and the role of the corpus is to provide details about their frequency and distribution. In a grammar classroom, this will generally translate into tasks in which the teacher selects a particular grammatical feature and

students then interrogate a corpus for it. The corpus findings will then illustrate the uses of that feature.

In corpus-driven investigation, teachers and students start out with minimal assumptions about which structures to look for, and by relying almost entirely on basic units such as word. They search a corpus for repeated patterns. In the classroom, this may materialize as bottom-up activities, such as data-driven learning tasks (Johns, 2002). In these, students generate hypotheses about the data or develop questions about grammar from other activities, analyze concordances, and confront their initial expectations.

The corpus-informed approach originates in the application of corpus linguistics to pedagogy, unlike the previous techniques which emerge out of research. A basic principle is that “corpus data alone does not dictate an instructional syllabus “(McCarthy, 2004, p.15). As a result, materials writers are free to take actions that would be frowned upon in the two previous orientations, including adapting examples and sequencing teaching points regardless of their frequency in a corpus.

The above-mentioned information has illustrated the importance of corpus in teaching grammar. However, the implementation of grammar instruction through corpus in the Indonesian College English classes remains under-explored. Therefore, the present study examines the extent to which corpus-informed data can create motivating and successful English grammar learning by posing two questions: (1) How is the implementation of corpus-informed data in English grammar pedagogy? and (2) What are the students’ responses to such a teaching procedure?

METHODS

This study took place at a state university in Karawang, West Java, Indonesia. We chose the university because of two considerations: (1) learning processes at this university were supported by well-equipped learning facilities including installed classroom projectors, broadband Wi-Fi internet networks, language laboratory, and a library, and (2) the authors got an entry access to this university. Since this research aimed to explore how corpus was used in teaching grammar and to reveal students’ responses to the use of corpus in teaching grammar, interpretative & phenomenological study was adopted.

The participants were 20 Indonesian undergraduate students in an English Education department. They were taking a course *Basic English Structure* taught by co-author from 9.00-11.00 am every Monday during August until December 2016. The participants were 17 females and 3 males. Their English proficiency ability ranged from elementary to intermediate based on a TOEFL paper-based placement test.

In this *Basic English Structure*, students were taught grammatical rules and given specific information about them, and then the students applied these rules when they used English – it is called deductive way. In fact, grammar is not always as it is. In the contrary, it seems to be more challenging and valuable for students to discover the rules by themselves. For this reason, Co-authors and I applied corpus-informed data in teaching grammar to one class of the first grade students of English Education program in order to increase students’ awareness of discovering rules from the students’ experience in learning grammar by using corpus. This class was carried out in regular class periods.

Mostly, the traditional pedagogical procedures to teaching grammar are through a process of: (1) the teacher presents information to the student, (2) the student practices with this information, and (3) the student produces new content. In contrast, in this study, teaching procedure was outlined as follows. Students were working in groups of four equipped with a unit of notebook with the Internet connection to work on online corpus, that is, British National Corpus (BNC). The grammar portion was taught with Data-driven Learning (DDL), sometimes called “Corpus-aided Discovery Learning.” It consisted of four steps. First, students in groups followed a worksheet with certain grammar points to be discussed including the passive voice and conditional sentence. This would guide the students through the concordancing lines to determine particular information or patterns. By working in groups, the students shared their discoveries, offered each other support, and were engaged and motivated. They would explore the usage of the three grammar points, as mentioned above, and wrote down the results. The time allotted for this inductive DDL exercises was about 30 minutes.

In the second step, students reported their findings to the class, and the teacher explained the patterns and rules they found. The teacher provided explicit explanations about the three grammar points discussed. In this step, the students would confirm and correct their hypotheses they built in the first step. In the third step, the teacher gave the students a worksheet of follow-up exercises including consolidation and production tasks for homework. In the fourth step, feedback was given to the follow-up tasks. This occurred in the next class; the teacher checked the answers to the follow-up activities from the previous class and confirmed their understanding of the language use.

To examine students’ responses to the activities of incorporating corpus-informed data into English grammar pedagogy, the data were collected with two research instruments: a questionnaire and an interview. Before both tasks were conducted, the participants were presented with grammar topics, i.e., conditionals and passive voices through concordance lines. After corpus-based grammar instruction, the researchers administered the questionnaire, asking the participants to complete it in 15 minutes and then interviewing each participant for approximately 20 minutes. The questionnaire asked their opinions and attitudes towards the corpus-informed teaching of English grammar. According to Dörnyei (2003), administering a questionnaire to a group of people can provide a huge amount of information about the opinions, attitudes, beliefs, interests, and values of research participants. The items in the questionnaire were mostly adopted from the studies of Girgin (2011). The Table 1 below presents the questionnaire items in which the students selected one of the six options

Table 1: The questionnaire items

Items	1	2	3	4	5
1. What do you think the difficulty of learning English grammar through corpus-informed activities?	Very difficult	←————→			Very easy
2. How useful do you find learning English grammar through corpus-informed activities?	Very useless	←————→			Very useful
3. I think that learning English grammar through corpus-informed activities is more difficult than learning English grammar through a course book.	Strongly disagree	←————→			Strongly agree
4. I think that learning English grammar through corpus-informed activities is more boring than learning English grammar through a course book.	Strongly disagree	←————→			Strongly agree
5. How do you evaluate your own participation in the course while learning English grammar via corpus-informed activities?	Very inactive	←————→			Very active
6. Using corpus-informed activities in learning of English grammar structures improved my English grammar skill.	Strongly disagree	←————→			Strongly agree
7. Using corpus-informed activities in learning of English grammar structures increased my confident about learning English grammar.	Strongly disagree	←————→			Strongly agree
8. I prefer using corpus-informed activities in learning of English grammar structures to using a course book in learning of English grammar structures.	Strongly disagree	←————→			Strongly agree
9. I think that corpus-informed activities are more helpful than a course book in learning of English grammar structures.	Strongly disagree	←————→			Strongly agree
10. I really felt positively towards using corpus informed activities in learning of English grammar structures.	Strongly disagree	←————→			Strongly agree
11. I recommend that lecturers should use corpus-informed activities so as to teach grammar structures in EFL classes.	Strongly disagree	←————→			Strongly agree

Adopted from Girgin (2011)

The first two items required the students to directly specify their opinions regarding the difficulty and usefulness of the corpus-based activities used in the experiment. While items 3 and 4 required the students to compare the use of corpus-based activities with the use of course book in grammar learning in terms of their boringness and difficulty; the fifth item required the students to evaluate their own participation in the course while learning the grammar structures via corpus-based activities. Items 6 and 7 required the students to directly specify their opinions about whether using corpus-based activities in grammar instruction increased their confidence in grammar learning and improved their English grammar skill. While Item 8 was constructed in order to require the students to specify their preferences (i.e., corpus-based activities or a course book) in grammar learning, item 9 required the students to compare the use of corpus-based activities with the use of course book in grammar learning in terms of their helpfulness. Items 10 and 11 intended to tap into the students' attitudes and recommendations regarding the use of corpus-based activities in grammar learning.

In addition, the interview aimed to obtain more information about the participants' perceptions of these activities. All interviews were conducted in Indonesian and the scripts

were translated into English. All of these encounters were digitally recorded with the permission on the participants. All of the interview data were transcribed, sorted out, and labeled as emergent finding themes. All of the data were analyzed through an interpretative and narrative lens.

McNamara (1999) asserts that interviews are very useful for understanding the story behind research participants' experiences, and they are also useful as follow-up to particular respondents to questionnaires in order to further examine their responses. In addition, in a semi-structured interview format, each respondent's individual case can be freely explored in greater detail (Williams & Burden, 1999). Therefore, we decided to use semi-structured interviews in this study in order to further explore the students' attitudes towards using corpus-based activities in grammar learning.

The interviews were conducted with 10 students. The students were asked to participate in the interview session after the attitude questionnaire was analyzed. Each interview in the focus groups was conducted in Indonesian with an aim to ease the task and obtain more reliable data, and the interviews were also audio-taped. Seven questions were asked which was adopted from the study of Girgin (2011). Seven questions were asked to the participants. While six of them were repeated questions that were previously asked in the questionnaire, only one question was not from the questionnaire, and it was asked in order to require the students to directly specify their opinions regarding the bareness of using the concordance lines to formulate the rule for the grammar structures.

The six questions were chosen from the questionnaire because it was thought that more detailed information was needed from the students on those six questions. While two of them required the students to compare corpus-informed grammar activities with the course book grammar activities in terms of their difficulty and boringness, three of them required the students to specify their opinions about whether corpus-informed activities increased their confidence about learning English grammar, whether they would recommend that teachers should use corpus-informed activities so as to teach English grammar structures, and whether they participated actively in the course while their teacher was teaching the grammar structures via corpus-informed activities. The last question asked aimed to tap into the students' attitudes towards the use of corpus-informed activities in grammar instruction.

FINDINGS AND DISCUSSION

The implementation of corpus-aided discovery learning was conducted as follows. Students are working in groups of four equipped with a unit of notebook with the Internet connection to work on online corpus, that is, British National Corpus (BNC). Then the teachers set the students some tasks. First, students in groups followed a worksheet with certain grammar points to be discussed including the passive voice and conditional sentence to explore the various patterns of passive voice and conditional sentence in a native corpus. This would guide the students through the concordancing lines to determine particular information or patterns or get them to formulate the usage rules for this form. For this, by working in groups, the students would be put in front of a concordance program on a computer through these steps: (1) connect to <http://corpus.byu.edu/bnc/>, (2) enter search query: selected and (3) examine the results and reach a conclusion. These steps were with some assistance from the teachers. Then the students shared their discoveries and offered each other support, and were engaged and motivated. They

would explore the usage of the two grammar points, as mentioned above, and wrote down the results. The time allotted for this inductive DDL exercises was about 30 minutes.

Second, students reported their findings to the class and the teacher explained the patterns and rules they found. The teacher provided explicit explanations about the two grammar points discussed. In this step, the students would confirm and correct their hypotheses they built in the first step. In the third step, the teacher gave the students a worksheet of follow-up exercises including consolidation and production tasks for homework. In the fourth step, feedback was given to the follow-up tasks. This occurred in the next class; the teacher checked the answers to the follow-up activities from the previous class and confirmed their understanding of the language use.

The participants taking part in this research mostly realized the advantages of using corpus data to learn grammar. Most of them seemingly had a very positive attitude towards corpus-informed grammar learning as it is considered to be an authentic tool in grammar learning through an inductive procedure. Some of their opinions are presented below:

I think learning grammar through corpus is happy enough because from this activity I get a new way to learn grammar without relying on course book. (Participant #1)

I like learning grammar through corpus since corpus connected with Internet. When I faced a difficult word I can browse it directly to corpus. And Corpus is up to date for this current situation. (Participant #2)

I am happy learning grammar through corpus since I can know the authentic English and I am not worry that My English is out of date. I like learn English through corpus than a course book. (Participant #3)

In particularly, the majority of participants claimed that corpus was a very useful tool to learn grammar. Also, most of them thought that learning English grammar through concordance lines was better than that a course book in terms of corpus provided authentic materials and it was up-to-date materials.

Based on the participants' attitude questionnaires results after two-week treatment shown by table 2, 20 participant students were required to fill in an attitude questionnaire that was designed to target their attitudes towards the use of corpus-informed activities in English grammar instruction. The questionnaire, which was in a Likert-scale format, included 11 items rated on various five-point scales. Additionally, 10 out 20 participants were asked to respond to seven questions in the interview session. Six of the questions asked in the interviews were repeated questions that were previously asked in the questionnaire; only one question was not from the questionnaire.

The data obtained from the students' responses to the questions asked in the interviews were analyzed under the evidences of the interview questions, which were intended to support and clarify the questionnaire data. Thus, after presenting the quantitative data for a particular questionnaire item, the qualitative data which were related to that particular question was presented.

The data obtained from the students' responses to the questionnaire were entered into SPSS, and a Cronbach Alpha coefficient was calculated for the overall reliability of the questionnaire. The Cronbach's Alpha coefficient for the whole questionnaire was .898. The frequencies for each of the responses to the items were then examined. Table 1 below presents the summary of students' responses to Likert scale attitude questionnaires and table 3 below presents the means, overall mean, and frequencies for items 1-11 in the attitude questionnaire.

Table 2: Summary of students' responses to Likert scale attitude questionnaires

Rating	1	2	3	4	5
Question 1 on difficultness of corpus use	Very difficult 0 (0%)	Difficult 6 (30%)	Somewhat 10 (50%)	Easy 3 (15%)	Very easy 1 (5%)
Question 2 on usefulness of corpus use	Very useless 0 (0%)	Useless 0 (0%)	Somewhat 6 (30%)	Useful 7 (35%)	Very useful 7 (35%)
Question 3 on comparativeness of corpus use and a course book use	Strongly disagree 1 (5%)	Disagree 5 (25%)	Somewhat 4 (20%)	Agree 5 (25%)	Strongly agree 5 (25%)
Question 4 on boredom of corpus use and a course book use	Strongly disagree 1 (5%)	Disagree 10 (50%)	Somewhat 4 (20%)	Agree 4 (20%)	Strongly agree 1 (5%)
Question 5 on students' participation of corpus use in learning grammar structures	Very inactive 0 (0%)	Inactive 3 (15%)	Somewhat 11 (55%)	Active 6 (30%)	Very active 0 (0%)
Question 6 on students' improvement of corpus use in learning grammar structures	Strongly disagree 0 (0%)	Disagree 3 (15%)	Somewhat 2 (10%)	Agree 10 (50%)	Strongly agree 5 (25%)
Question 7 on students' confidence of corpus use in learning grammar structures	Strongly disagree 1 (5%)	Disagree 0 (0%)	Somewhat 13 (65%)	Agree 3 (15%)	Strongly agree 3 (15%)
Question 8 on students' preference of corpus use in learning grammar structures	Strongly disagree 3 (15%)	Disagree 4 (20%)	Somewhat 8 (40%)	Agree 2 (10%)	Strongly agree 3 (15%)
Question 9 on helpfulness of corpus use	Strongly disagree 1 (5%)	Disagree 5 (25%)	Somewhat 7 (35%)	Agree 3 (15%)	Strongly agree 4 (20%)
Question 10 on students' positiveness of corpus use in	Strongly disagree 0 (0%)	Disagree 1 (5%)	Somewhat 6 (30%)	Agree 7 (35%)	Strongly agree 6 (30%)

learning grammar structures					
Question 11 on students' recommendation of corpus use in learning grammar structures	Strongly disagree 1 (5%)	Disagree 2 (10%)	Somewhat 11 (55%)	Agree 2 (10%)	Strongly agree 4 (20%)

Table 3: Summary of students' responses to attitude questionnaires

Items	1	2	3	4	5	N	Mean	Std Dev.
1. What do you think the difficulty of learning English grammar through corpus-informed activities?	Very difficult	←————→			Very easy	20	2.95	0.83
2. How useful do you find learning English grammar through corpus-informed activities?	Very useless	←————→			Very useful	20	4.05	0.83
3. I think that learning English grammar through corpus-informed activities is more difficult than learning English grammar through a course book.	Strongly disagree	←————→			Strongly agree	20	3.4	1.27
4. I think that learning English grammar through corpus-informed activities is more boring than learning English grammar through a course book.	Strongly disagree	←————→			Strongly agree	20	2.70	1.03
5. How do you evaluate your own participation in the course while learning English grammar via corpus-informed activities?	Very inactive	←————→			Very active	20	3.15	0.67
6. Using corpus-informed activities in learning of English grammar structures improved my English grammar skill.	Strongly disagree	←————→			Strongly agree	20	3.85	0.99
7. Using corpus-informed activities in learning of English grammar structures increased my confident about learning English grammar.	Strongly disagree	←————→			Strongly agree	20	3.35	0.93
8. I prefer using corpus-informed activities in learning of English grammar structures to using a course book in learning of English grammar structures.	Strongly disagree	←————→			Strongly agree	20	2.90	1.25
9. I think that corpus-informed activities are more helpful than a course book in learning of English grammar structures.	Strongly disagree	←————→			Strongly agree	20	3.20	1.20
10. I really felt positively towards using corpus informed activities in learning of English grammar structures.	Strongly disagree	←————→			Strongly agree	20	3.90	0.91
11. I recommend that lecturers should use corpus-informed activities so as to teach grammar structures in EFL classes.	Strongly disagree	←————→			Strongly agree	20	3.30	1.08
Overall							3.34	1.00

As seen in Table 3, the overall mean of the mean scores of the students who completed the attitude questionnaire shows that the students' attitudes were somewhat neutral towards using corpus-informed activities in grammar instruction. The frequencies presented for the first item show that half of the whole students who completed the attitude questionnaire found learning the grammar structures through corpus-based activities somewhat difficult; however, the other 4 students (20%) found learning the grammar structures through corpus-based activities somewhat easy. However, there were 13 students (65%) who responded to the first

question by selecting either 3 or 4, which indicates that the majority of the students had mixed, uncertain, or conflicting feelings about the difficulty of using corpus-informed activities in grammar instruction.

When the students were asked to compare using corpus-informed activities with the use of course book activities in grammar instruction in terms of their difficulty (item 3), half of the students agreed with the idea that learning the grammar structures via corpus-informed activities was more difficult than learning them via the course book. When this question was asked to the students in the interviews, half of the participant (50%) agreed that corpus-based activities were more difficult than the activities that the course book presented. One of the students (5%) said that:

Learning English grammar both passive voices and conditional sentences through corpus is very difficult than that course book. Since, by using corpus, I don't know what the formula/pattern and the explanation for the material being presented. This is my first experience using corpus. So, I have not got any information about it before.

The student's response shows that there was a difficulty learning passive voices and conditional sentences which the student had experienced through using corpus-informed activities. However, two of the students (10%) stated that using corpus-informed activities was easy for them because they could find a lot of grammar structures (passive voice) through these activities. They stated that they would learn passive voice easily through the activities that the course book presented; however, they agreed that they had difficulty in the learning of third conditional through these activities.

When the students were interviewed whether they had difficulty in analyzing the concordance lines, the majority of the student participants had very similar answers. One of the students stated that:

Deriving the rules of the grammar structures through the concordance lines seemed more difficult than understanding the rules of the structures through the course book. When the teacher firstly showed us the concordance lines on a computer screen without any explanation, it was so difficult to understand the sentences on concordance lines because the sentences did not mean anything. I thought each line is a fragment of text or it is not a full sentence. Also I thought each line is from a different text, which is not an authentic experience of language at work. That's why, I felt psychologically negatively towards using the concordance lines in the first time. However, after we worked on the leading questions with the help of the teacher, it was easier for us to analyze the concordance lines.

The student's response shows that the appearance of the concordance lines seemed very challenging for the students at first. The majority of the students stated that they needed help or guidance from the teacher in order to analyze or understand the concordance lines. The frequencies presented for the second item in the questionnaire show that 14 students (70%)

found using corpus-informed activities in the learning of grammar structures useful. However, the frequencies for item 9 show that six students (30%) disagreed with the idea that corpus-based activities helped them learn the grammar structures better than the course book. Thus, it is interesting to note that even though the majority of the students considered using corpus-informed activities useful in order to learn English grammar structures, they did not think that corpus-informed activities were more helpful than the course book in learning English grammar structures.

When the students were asked to directly specify their preferences (i.e., learning grammar structures via a course book or via corpus-informed activities), 15 students (75%) disagreed with the idea that they would prefer using corpus-informed activities in grammar instruction to learn English grammar structures (item 8). Additionally, the frequencies for item 11 show that the 14 students (70%) disagreed with the idea that instructors should use corpus-informed activities to teach English grammar structures in EAL classes; however, 6 students (30%) thought that it would be a good idea for instructors to use corpus-informed activities while teaching English grammar structures to EAL learners, as stated by one of the students:

I really recommend that teachers should use corpus-informed activities in EAL classes; however, I think that there are some grammar structures that a course book can teach better than corpus-based activities. In other words, teachers should use the activities in balance. I do not think that all grammar structures can be taught via corpus-informed activities. If teachers think that one particular grammar structure of English can be understood when it is taught via corpus-informed activities, they should teach it via these activities; however, if they think that some of the structures of English cannot be understood when they are taught via corpus-informed activities, they should use course books to teach these structures. I think that teachers should be trained in the first place in order to know which of the grammar structures of English can be understood when they are taught via corpus-informed activities. (Participant #4)

The analysis of the student's response reveals that corpus-based activities can be used in order to teach some grammar structures of English in EAL classes proportionally with a course book. However, all students agreed with the idea that teachers should be given training before using corpus-based activities in EAL classes.

The frequencies presented for item 10 in the questionnaire show that only one student disagreed with the idea that they really felt positively towards using corpus-based activities in learning grammar. However, 19 students (95%) responded positively to the question. Additionally, when this question was asked in the interviews, the majority of the students' comments demonstrated that they benefited from using corpus-informed activities. While some students stated that they felt positively towards using corpus-informed activities in grammar instruction because they generally thought that the effects of learning English grammar via formulating the rules of the grammar structures would last longer than those of learning English grammar via reading the rules of the grammar structures, some of them agreed that they felt positively towards using these activities because they thought that these tools directed them into a new way in learning grammar and they would be more confident in ICT era.

When the students were asked to compare the use of corpus-informed activities with the course book activities in terms of their boringness, 11 students (55%) disagreed with the idea that using corpus-based activities in grammar instruction was more boring than using a course book (item 4). Additionally, when this question was repeated again in the interviews, all students agreed that they liked using corpus-based activities in learning grammar. They agreed with the idea that using corpus-informed activities was not boring compared to using the course book to learn English grammar structures. When they were asked about the reasons why they thought so, some of them stated that deriving the rules of the grammar structures was something new for them, and some of them stated that the activities presented for them were more different and diverse compared to the activities that the course book presented. Only six students (30%) stated that using corpus-based activities was more boring than using the course book. They stated that using the concordance lines was very time-consuming in order to understand the rules of the grammar structures. They thought that reading the rules and working on the exercises afterwards were more enjoyable than trying to formulate the rules on their own in order to work on the exercises. They thought that using the concordance lines was very confusing.

The frequencies presented for item 6 reveal that fifteen students (75%) responded that using corpus-informed activities improved their English grammar skill. Only three students (15%) disagreed with the idea that using corpus-informed activities helped them improve their English grammar skill. Additionally, the frequencies presented for item 7 reveal that five students (25%) agreed with the idea that using corpus-informed activities increased their confidence about learning English grammar. Only one student (5%) disagreed that these activities helped them increase their confidence about learning English grammar; the remaining participants were neutral (65%). When this question was asked again in the interviews, almost all students (95%) informed that using corpus-informed activities in learning grammar increased their confidence.

The frequencies presented for the fifth item show that most of the students (55%) thought they were somewhat inactive in the course while the instructors were teaching the grammar structures via corpus-informed activities. Only 6 students (30%) thought that they participated actively in the course while the instructors were teaching the grammar structures via corpus-informed activities. However, when this question was asked again in the interviews, the majority of the students agreed that they participated actively in the course while the teachers were teaching the structures through corpus-informed activities. They stated that they did not want to raise their hands when the teachers asked them to analyze the concordance lines because they did not understand what the sentences in the concordance lines meant. However, when the teachers gave them the papers on which they saw the leading questions, they knew that they were required to answer the questions on the papers. As the questions required the students to derive the rules of the grammar structures from the concordance lines, they stated that they started to raise their hands in order to answer the questions on the leading question papers. Thus, the majority of the students agreed that they had to participate in the course actively because of the leading questions.

It was found that three questions asked in the questionnaire revealed different results when they were repeated in the interviews. The students' responses to one of the questions asked in the questionnaire revealed that 11 students (55%) were somewhat inactive and 3

students (15%) were inactive in the course while the teachers were teaching the grammar structures via corpus-based activities; however, when the same question was repeated in the interviews, the students' responses to the question demonstrated that the interviewed students felt that they had participated actively during these activities.

Moreover, the students' responses to one of the questions asked in the questionnaire demonstrated that 3 students (15%) disagreed and 11 students (55%) were neutral with the idea that teachers should use corpus-informed activities in EAL classes; however, when the same question was repeated in the interviews, the students agreed with the idea that teachers can use corpus-informed activities in EAL classes.

The results described above revealed some conflicts between the questionnaire responses and the interview data, even though the interview data supported some of the quantitative data obtained through the questionnaire. The results of the questionnaire revealed that the students, who were inexperienced EFL learners, held neither negative nor positive attitudes towards using corpus-informed activities in their grammar learning. Their attitudes were found to be somewhat neutral towards using these sources in the learning of English grammar. However, the students who were interviewed appeared to demonstrate more positive attitudes towards using these sources in their grammar learning.

CONCLUSIONS

This study has shown that Incorporating Corpus-Informed Data into English Grammar Pedagogy can enhance students' language awareness, increase their appreciation of context in language use and their critical understanding of grammar, and promote discovery learning in order to make learning more effective (Liu & Jiang, 2009). In addition, the EAL students obviously enjoyed learning grammar using concordance lines since they thought it was a new way in learning grammar, and language corpora provided a lot of authentic materials and rich language description such as lexicogrammatical patterns and the frequency of these patterns. This made students satisfied with the exploration into language data offered by corpora. They also seemed to begin to understand some grammar points they had unsuccessfully learnt through traditional tools e.g., memorization.

In fact, grammar is not always something to be taught in a deductive way i.e., rule-based teaching; in contrast, it appears to be more challenging and useful for students to discover the rules by themselves (Sripicharn, 2012). Corpus-informed material can be motivating because teachers and students can be sure that the language they are practicing is up-to-date, used in everyday situations. It is not artificial or invented language but consists of the most widely used grammar (McCarthy, 2004).

Three important instructional implications can be drawn from the findings of the study. First, Language corpora are very beneficial for language pedagogy since language corpora help students learn about certain language uses that are not available in any of the traditional tools. In addition, corpora allow students to examine these language features in context. Second, students who like to use dictionaries and grammar books as references still can benefit from corpora and use them as a 'complement' to these traditional tools. Third, corpora helps students get a broader view of language (i.e., corpora can compare spoken and written languages). Fourth, teachers have an important role in using corpus in order to teach language in the classroom. Therefore, teachers should be properly trained on how to use corpora first. Fifth,

teachers can serve as a facilitator in the preparation of appropriate corpus-informed lessons as well as providing further explanations to students about English grammar. However, corpus software is not always available for students. Therefore, teachers need to introduce their students to free corpora online.

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