

# Effectiveness of Grammar Learning through Data-Driven Learning (DDL) with Undergraduate Students

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## Abstract

*This study investigates the extent to which paper-based data-driven learning (DDL) activities can improve Thai EFL students' grammar learning of conditional sentences (the second condition), as well as the participants' attitudes toward learning through the DDL approach. This was a two-week research using a one-group pre-test and post-test design. The convenience-sampled participants were 15 Thai EFL undergraduate students majoring in English at the Faculty of Humanities and Social Sciences. This study included three research instruments: a pre/post-test, an attitudes questionnaire, and interviews. The instructional approach, which consisted of the paper-based DDL material, was devised using The Corpus of Contemporary American English (COCA) consisting of 40 concordances. Using non-parametric statistics Wilcoxon Signed Rank Test, there is a statistically significant difference in mean scores in the findings ( $p < .001$ ), indicating that their grammatical knowledge was developed after participating in DDL activities. Furthermore, the participants had positive attitudes towards DDL learning since they considered DDL as a fruitful and beneficial tool in helping them acquire grammatical knowledge and language patterns by themselves. Therefore, the outcomes of the research have a noteworthy impact on the field of teaching English, showcasing the potential of utilizing corpus data to analyze genuine language patterns and enhance learners' understanding of language structure.*

**Keywords:** Data-Driven Learning, Corpus Linguistics, Cognitive Grammar, Conditional Sentences

## Introduction

[Anyan \(2006\)](#) proposed that the most difficult skills of English to teach Thai learners is grammar. This is because the differences in terms of the structures of Thai and English grammar. In addition, it is said by Anyan that Thai grammatical structure seems to be straight forward and sophisticated than English grammatical structure, for example, the change of verb forms in English to show present and past does not exist in Thai language. Also, the articles in English do not reflect the real use in Thai. Apart from these differences, it brings about the barriers to Thai learners in which they lack awareness in selecting proper English grammar when they use the language as well as try to produce ungrammatical sentence structures ([Boontam & Phoocharoensil, 2018](#)). Even though Thai students get exposed to English grammar at an early age, however, most of them cannot make use of it into real life communication ([Chingchit, 2008](#); [Choomthong, 2014](#)). Due to the problem, teachers should pay more attention and put more effort to the teaching process when teaching grammar to the learners. The emphasis should center around the change of teaching method by focusing more on inductive language teaching approach rather than using the Grammar Translation Method (GTM) or deductive approach

which are the popular methods of teaching among Thai teachers. On the other way round, it does not mean that deductive method could not yield instructive results in language learning and teaching in the classroom but both top-down and bottom-up approaches should be used in classroom contexts interchangeably where the target focus is on the students.

When it comes to inductive language teaching approach where it promotes student-centered, one of them in grammar learning and teaching by employing the fine-grained information from corpus is “Data Driven Learning” (DDL). With DDL, students have to explore the authentic language through the concordances because the concordance lines in corpus denote the real examples of language use by the native speakers. Additionally, the data concerning language patterns obtained from the concordance lines have to be identified, analyzed and generalized by the learners themselves. Turning to teachers’ role, they seem like a helper or a facilitator who guides the learners when they are investigating the language patterns. This kind of teaching method can be called the “student-initiated language research” in which it tries to enhance learner autonomy.

The major motivation in conducting this research is to explore students’ participation as well as grammar teaching in tertiary context. The major problems arise from both sides of learners and a teacher in the “Fundamental English Course”. When it comes to the side of learners, they lack confidence to express their ideas towards the lesson in the classroom. This might result from the massive class size where it contains approximately 60 to 80 students per each section. Moreover, the textbook used in the classroom is old e.g., exercises. Apart from this aspect, students cannot relate the examples used in the core textbook into their real context because some sentences use the terms that students do not familiar with their everyday environment. They are EFL learners who have never explored the authentic language used by the native speakers. Additionally, topics or contents in the class are not interesting. This could result in students’ participation in the classroom. On the other way round, the first problem from the teacher is the strategy or way teacher explains grammar rules in the classroom. Most of

the time, teacher employs deductive approach and GTM to teach the learners by translating the content in textbook from English to Thai. Another thing that could be considered as problem from a teacher is the activities that teacher uses to teach grammar in the classroom. To elaborate, teacher may directly ask students a question which might result in their confidence to answer. Sometimes, they might be afraid to answer because they do not want to lose their faces in front of their peers in the classroom. In a nutshell, conducting this present study by employing DDL and corpus could display another side of teaching approach to fill the aforementioned problems. Students could work in pair or even in a smaller group which might increase their confidence in expressing their ideas towards the grammar lessons as well as reduce the class size. In addition, the use of paper-based material by extracting the data from corpus could help increase the exploration of the real-language used by the native-speakers to the learners.

### Research Objectives

1. To examine the effectiveness of data-driven learning (DDL) method in developing Thai undergraduate students in learning conditional sentences (the second condition).
2. To investigate the attitudes of Thai undergraduate students towards learning conditional sentences (the second condition) through DDL approach.

### Research Questions

1. Are there any significant differences in the scores of pre-test and post-test after DDL is introduced in teaching conditional sentences (the second condition) to undergraduate students?
2. What are Thai undergraduate students’ attitudes towards DDL approach?

### Literature Review

In this section, the main theoretical frameworks, and empirical past studies are reviewed to support the study. In order to investigate the effectiveness of data-driven learning (DDL) method in developing Thai undergraduate students in learning conditional sentences (the second condition) and to explore the attitudes of Thai undergraduate students towards learning if-clause (the second condition) through

DDL method, cognitive grammar, corpus linguistics and data-driven learning in language teaching, and previous empirical studies are reviewed.

### The Notion of Cognitive Grammar

The concept of cognitive grammar was developed in the late 1970s by Langacker as a radical alternative to generative grammar (Langacker, 1987; Taylor, 2002). It differs from generative grammar by rejecting the idea that language and general cognition are separate. Additionally, it also challenges the notion that meaning is mostly composed of individual building blocks. Instead, CG argues that words serve as cues to activate a vast network of knowledge domains that can be combined in flexible and creative ways.

According to cognitive grammar, language is not just a set of arbitrary rules and conventions, but is grounded in human experience and cognition. It also suggests that the structure of grammar arises from the conceptualization of experience, and that the way in which people use language reflects the way in which they think and perceive the world. One of the key concepts in cognitive grammar is the notion of construal. It refers to the way in which a particular situation or event is mentally represented. Moreover, construal is recognized as a key factor in shaping the structure of language, with different constructions and grammatical forms reflecting different ways of construing a particular situation or event. In a nutshell, cognitive grammar provides a way of understanding how language is connected to human cognition, and how the structure of language is shaped by the way we perceive and think about the world. Also, cognitive grammar in this study is recognized as an umbrella term where it pertains Data-Driven Learning (DDL) as sub-category.

### Corpus Linguistics and Data-Driven Learning in Language Teaching

The term corpus can be defined a “a collection of text, written and spoken, which is stored on a computer” (O’Keeffe et al., 2007, p.1). Moreover, using corpora allows for both quantitative and qualitative research methods. For quantitative research, the frequency of particular words or phrases can be analyzed, while qualitative research can investigate how language is used in different

contexts, such as gender-specific language patterns. Additionally, corpora provide natural and authentic data, according to Sinclair (1990), and can be used to analyze language change over time when different languages interact, as noted by Lindquist (2009) as cited in Boontam and Phoocharoensil (2018).

Apart from the given advantages of using corpora, Römer (2008) adds that both teaching materials and teaching syllabi can be designed by applying corpora for teachers in the language learning and teaching. Usually, English teachers/lecturers assume that a textbook used could provide sufficient and useful patterns for students. So, they follow the language patterns/rules presented in the textbook. When it comes to textbook, most textbook writers tend to rely their writing based on their intuition and what other textbooks write in general with the absence of consulting a corpus (Jones & Waller, 2015). In addition, grammar lessons in numerous textbooks are designed to present it explicitly and deductively. Also, those textbooks furnish various kinds of exercises e.g., memorizing dialogues, reading texts, and doing transformation exercises (Cowan, 2008). As advocated by Long (1997) the way of explicit teaching by focusing on forms could result in students overwhelmed with various grammatical forms that hardly meet their needs as well as not reflect the real-life language use to learners.

As previously stated by Römer (2008), we, as English language teachers/lecturers, can make use of corpora to teach lessons directly by integrating a teaching approach called “Data-Driven Learning” (DDL) into English language classroom. “Data-Driven Learning” (DDL) was initially proposed by Tim Jones in the 1980s. DDL is an inductive learning approach designed to provide learners with the direct access to real-life language so that they can summarize their own language rules/structures (Johns, 1991). Even though DDL is an inductive approach but there is some difference to the traditional inductive in an aspect of learning procedures. In DDL, data will lead learners to the discovery of language rules/structures without the awareness of the results at the beginning (Johns, 1991). The role of the learners is seen as both language learners and language researchers at the same time (Cheng, 2010).

## Previous Empirical Studies

Some scholars (such as [Yepes & Krishnamurthy, 2010](#); [Huang, 2014](#); [Lin & Lee, 2015](#); [Nugraha et al., 2017](#) and [Boontam & Phoocharoensil, 2018](#)) found the advantages of DDL in grammar teaching. To illustrate, the research by [Yepes and Krishnamurthy \(2010\)](#) explored the effectiveness of both corpus-based and corpus-driven approaches by employing the Aston Corpus Network (ACORN) to teach Spanish grammar. The results showed that students had positive attitudes towards learning grammar through corpus since they considered that these methods were beneficial for them in the execution of future tasks. In addition, another study by [Huang \(2014\)](#) investigated the acquisition of collocations and grammatical patterns. It found that the use of paper-based DDL activities proved to be advantageous for students in acquiring collocations and grammatical patterns. The study also found that students were able to better retain the usage of target words in the long run and produce sentences with fewer errors and more diverse NP patterns, adjectives, premodifiers, and grammatical structures in the posttest. The results of the study by [Lin and Lee \(2015\)](#) also indicated positive attitudes towards using DDL for teaching English grammar. The learners' roles appeared to be active learners in this approach when compared to Grammar Translation Method (GTM) in which learners' roles are seen as passive learners. Next, it is the study by [Nugraha et al. \(2017\)](#) which employed the British National Corpus (BNC) in teaching grammar. The findings also confirmed the results of other studies that the majority of the students had positive attitudes towards DDL method in which they felt that this was different and effective from traditional English lessons. When it comes to the last empirical past study, [Boontam and Phoocharoensil \(2018\)](#) found the improvement of young learners learning prepositions with the statistically significant difference in the mean scores. A variety of complex sentences can be produced in meaningful and grammatical ways after DDL was taught in the class. Also, learners reflected positive attitudes as they found DDL was fun, interesting, and challenging.

## Research Methodology

This section illuminates the development of a paper-based material along with the way students obtained the lesson regarding conditional sentences (the second type) in the classroom. Also, it provides a detailed account of the specific research procedures comprising research design, participants, data collection and instruments, data analysis, and ethical consideration to answer the two main research questions.

## Material Construction

Regarding paper-based construction, the paper-based DDL teaching material (appendix A) is devised using The Corpus of Contemporary American English (COCA) developed by Davies. To make sure that the paper-based DDL material is appropriate to the undergraduate EFL learners, 40 concordance lines from COCA were carefully selected by the researcher. To illustrate, only the concordances that seemed proper to participants' level to interpret and understand were selected by the researcher who played another role as a teacher in the university. [Braun \(2007\)](#) suggests that the selected concordance lines should contain only words and sentence structures that the participants should be familiar with it is due to the fact that if the selected concordances comprise too many complex sentence structures and unfamiliar words, the participants might encounter the difficulties in interpreting the data which could lead to wrong generalization.

In order to make sure that the paper-based DDL teaching material is appropriate to teach undergraduate students, it was examined for content validity using expert judgement. To explain, she is the one who has experienced in conducting research concerning DDL. Also, she obtained her BA and MA in English and English Language Teaching respectively, and she is currently Ph.D. candidate in the field of English Language Teaching as well. Additionally, she has been teaching English in both secondary and university levels for over nine years.

## Instructional Treatment

In the DDL class, a teacher-led approach called "teacher-led end" was used to facilitate the task. This was done because the learners had varying levels of English proficiency and were not familiar with this

teaching method. The researcher, who also served as the teacher, prepared and controlled the DDL task beforehand to prevent over generalization by the participants. In the classroom, the teacher explained the task, provided directions and questions, and presented the concordance lines in Key Word in Context (KWIC) format to make it easier for the learners to understand the target language patterns and structures. The learners worked in small groups to analyze the data and share their findings with the class, applying their generalized rules.

### **Research Design**

This present study investigated the effectiveness of data-driven learning (DDL) method in developing Thai undergraduate students in learning conditional sentences (the second condition). Also, it explored the attitudes of Thai undergraduate students towards learning conditional sentences (the second condition) through DDL approach. In order to answer the two major research questions, the research methodology of the research was based on quantitative paradigm which employed one group pre-test post-test design as well as convenience sampling technique to conduct the study.

### **Participants**

This study employed the convenience sampling technique to recruit the participants. The participants were Thai EFL undergraduate students in English program at the government university in the northern part of Thailand because the researcher is currently teaching in this university. In this study, 15 undergraduate students from the second year whose L1 language is Thai. The reason that the researcher selected the second-year undergraduate students is that it seems to be proper level because it is in between halfway to graduate, and it is to avoid confounding environment in which students obtained the knowledge from the high level of subjects being taught in the third and the fourth years in the curriculum provided by the university. Additionally, all of them have been studying English as a second language for more than five years and have a mean age of 20 years old.

However, the researcher is aware of the possibility and the ability to generalize the findings of the study

to most of Thai learners. Therefore, learners who can strive A2 level will be included in this study ([Boontam & Phoocharoensil, 2018](#)). Regarding the CEFR levels, [Boontam & Phoocharoensil \(2018\)](#) added that learners with A2 level of proficiency are able to cope with simple, straightforward information and patterns and begin to express themselves in familiar contexts. Thus, it could probably be stated that A2 level seems to be proper to begin learning through data-driven learning method (DDL). In a nutshell, all participants in this study passed all compulsory courses of English major e.g., fundamental English and English form and usage which were considered as A2 level.

### **Data Collection and Instruments**

This current research comprised 15 learners who obtained A2 level of English proficiency were selected as the participants of the study. To clarify, the reason that the researcher selects only 15 high proficiency learners it is due to the fact that there are limited number of the second-year English major students in the university.

Before the teaching period, all participants were asked to take the short pre-test (Appendix C) of their grammar knowledge regarding conditional sentences. Additionally, all participants were taught in an extra class twice which did not affect their regular classes. The total of teaching periods is equal to two classes (six hours).

After two classes of instruction, all participants were then asked to complete a post-test with the same test task of the pre-test. Moreover, both pre-test and post-test scores were evaluated by the researcher. Then, the attitude questionnaires in an online version, which was adapted from [Boontam and Phoocharoensil \(2018\)](#), was distributed to participants in order to determine the attitudes of Thai undergraduate students towards learning conditional sentences (the second condition) through DDL approach. In terms of an online questionnaire, it consisted of 12 statements of a 5-points Likert scales, from 5 = Strongly agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly disagree. Also, one open-ended question about their problems in learning and three items of closed questions were distributed (Appendix B). As

suggested by [Nunan and Bailey \(2009\)](#), a frequently used of questionnaire format is to have closed items followed by a space for open-ended comments, which is the common style used in ELT field. Thus, the integration of both open-ended and closed questions was employed in this study.

### Data Analysis

In order to interpret the data, both pre-test and post-test mean scores were calculated and compared by using non-parametric statistics Wilcoxon Signed Rank Test through PSPP program to investigate the effectiveness of using DDL in teaching conditional sentences (the second type). The reason that the researcher used non-parametric statistics is that the population in this study was less than 30 people and the data distribution were not normalized. That is why Wilcoxon Signed Rank Test served the purpose of the study in scrutinizing the differences in the scores of pre-test and post-test. When it comes to participants' attitudes towards the DDL approach, the findings from the 5-point Likert scales were interpreted by comparing the frequency and reported in terms of mean score and standard deviation (SD). A mean score of learners' satisfactions towards DDL method was interpreted by relying on the [Sclove's \(2001\)](#) range. In addition, their comments in the open-ended parts will be translated into English by the researcher.

The next section, findings regarding the two major research questions will then be presented.

### Findings

This section reports the findings obtained from 15 participants regarding the two major research questions. The findings is divided into two main parts. The first part deals with the analysis of pre-test and post-test scores of all participants to investigate the effectiveness of DDL method. The second part reports participants' attitudes towards grammar learning using an online questionnaire.

Table 1 depicts the raw scores of both pre-test and post-test of the learners in grammar learning through DDL method. Apparently, almost all the learners (14 students) performed better after they learned conditional sentences, the second condition through DDL. Additionally, the mean scores of the

learners increased from 6.8 (SD = 2.78) in the pre-test up to 12 (SD = 2.42) in the same test task of post-test by at least five points. On the other way round, it was observed that one participant did not get any improvement in the post-test but his/her score did not decrease from the pre-test.

**The Effectiveness of DDL in Grammar Learning**  
**Table 1 Raw Pretest, Posttest, and Gained Score of the Students (n = 15)**

Student Number	Pretest	Pretest (x)	Posttest	Posttest (x)	Gained Score (Posttest-Pretest)	Gained Score (x)
1	12	6.8	15	12.0	3	5.2
2	10		13		3	
3	4		12		8	
4	6		13		7	
5	7		14		7	
6	4		12		8	
7	5		11		6	
8	3		12		9	
9	8		10		2	
10	4		10		6	
11	6		14		8	
12	8		12		4	
13	9		13		4	
14	5		5		0	
15	11		14		3	

**Table 2 Test Statistics from Wilcoxon Signed Rank Test**

	Pretest-Posttest
Z	-3.30
Asymp. Sig. (2-tailed)	.001

The results obtained from Wilcoxon Signed Rank Test in Table 2 clearly demonstrated that learners' grammatical knowledge in terms of conditional sentences, the second condition have been improved after the treatment of DDL was introduced to the learners. Similarly, the p value which was lower than .05 and could be regarded that their mean scores was statistically significant in which it sharply increased from the pre-test to the post-test at a significant level.

**Students' Attitudes towards DDL Method**

This section reveals the learners' attitudes towards learning through DDL approach. The results from the questionnaire centered around on three aspects which were 1) learners' satisfactions towards DDL method, 2) difficulties or problems in learning, and 3) reasons why they liked DDL method.

Regarding learners' satisfactions towards DDL method, this present study used five-point Likert rating scale including 12 items. The five-point rating scale could be interpreted as follows:

Strongly agree = 5

Agree = 4

Neither agree nor disagree = 3

Disagree = 2

Strongly disagree = 1

A mean score of learners' satisfactions towards DDL method was interpreted by relying on the following range (Sclove, 2001):

Very high = 4.20 - 5.00

High = 3.40 - 4.19

Moderate = 2.60 - 3.39

Low = 1.80 - 2.59

Very low = 1.00 - 1.79

**Table 3 Learners' Attitudes Towards DDL Method (n=15)**

Category	Statement	Level of Attitude		Level
		$\bar{x}$	S.D.	
Satisfaction	I find grammar learning in this way is fun and not boring.	4.53	0.63	Very high
	I think that grammar learning is more challenging than other traditional method.	4.53	0.64	Very high
	Grammar learning is difficult for me.	3.73	1.10	High
	I like to discover the language pattern by myself.	4.33	0.82	Very high
	I want to study other English lessons through grammar learning method in the future.	4.73	0.46	Very high
Content	Learning grammar this way makes me understand lesson better.	4.60	0.63	Very high
	When I learn grammar, I prefer teacher-centered method to learner-centered method.	3.53	1.51	High
	I can retain what I have learned in the long term after studying grammar this way.	4.60	0.51	Very high
	I was encouraged to actively think, express my idea and speak English during class activities.	4.86	0.64	Very high
	I completely understand how to use conditional sentences: the second type by learning grammar this way.	4.66	0.62	Very high
	I think that I obtain more knowledge in terms of new sentence structures from studying the sample sentences.	4.60	0.51	Very high
	In the class, I think that I understand the lesson better when teacher used scaffolding techniques.	4.60	0.51	Very high

Table 3 demonstrates learners' satisfactions towards DDL method. The overall findings indicated that majority of the learners considered DDL method as fun and not boring with high level as indicated in an average mean score of 4.53 (SD = 0.63). Furthermore, most of the learners not only evaluated DDL as challenging than other traditional method but also difficult to learn as shown in the mean scores of 4.53 (SD = 0.64) and 3.73 (SD = 1.10), respectively. Apart from that, the learners revealed that they enjoyed exploring language structures/

patterns by themselves and wanted to learn other English lessons through DDL in the future as manifested through the mean scores of 4.33 (SD = 0.82) and 4.73 (SD = 0.46), respectively. Turning to content, more than half of the learners evaluated very high satisfaction (M = 4.60, SD = 0.63) since they were encouraged to understand lesson better. Interestingly, most of them rated high satisfaction (M = 3.53, SD = 1.51) as they preferred teacher-centered method to learner-centered method where the role of teacher is seen as a facilitator. In addition,

it was found that DDL method in helping retain long term memory as well as actively think, express idea, and speak English during class activities was rated with very high satisfaction as indicated through the mean scores of 4.60 (SD = 0.51) and 4.86 (SD = 0.64), respectively. Also, most of them reflected very high satisfaction (M = 4.66, SD = 0.62) that DDL could help them completely understand how to use conditional sentences, the second condition. Besides, very high satisfaction was evaluated since learners gained more knowledge in terms of new sentence structures from studying the sample sentences as well as understood the lesson better when teacher used scaffolding techniques as shown in the average mean scores of 4.62 (SD = 0.51), equally.

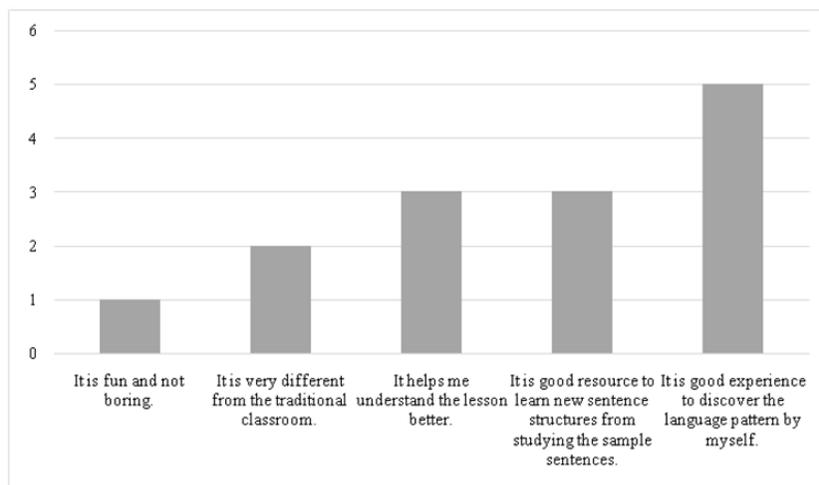
When it turns to the second part of the questionnaire, it showed that majority of the learners (12 learners) did not face any problems in learning through DDL method. In contrary, only three learners encountered some difficulties in learning as stated below in the Table 4 as follows:

**Table 4 Learners’ Problems in Studying through DDL Method**

Learners	Problems
L12	<i>“I feel not too sure and confident to answer.”</i>
L13	<i>“Some examples confuses me and makes it hard to understand.”</i>
L14	<i>“I cannot follow some steps in the class since this is my first time learning through this way.”</i>

As can be seen in the Table 4 above, some learners encountered some difficulties during the class. Since the DDL approach is seemingly new for them so that it resulted in the way they interpreted the data from the corpus. In addition, it showed that one participant expressed his/her idea regarding confident in answering the question.

Next, reasons why learners enjoyed learning through DDL method will be presented using bar chart.



**Figure 1 Reasons Showing why the Learners liked DDL Method (n =14)**

With regard to learners’ satisfactions towards grammar learning through DDL method, it demonstrated that almost all of the participants (n =14) in this study had positive attitudes in grammar learning i.e., conditional sentences (the second condition). However, the data revealed only one student who did not enjoy learning through DDL without encountering any problems along the class. Also, the participant simply stated that he/she did

not like DDL with no recommendation/comment provided.

The data presented in Figure 1 indicated that most of the learners enjoyed DDL because they found it is good to discover and explore language by themselves (n=5). In the similar vein, they found that DDL was helpful to understand the lessons (n = 3) and a good resource to learn new sentence structure (n = 3) as the second important reasons. Then, two learners

considered that DDL was different from traditional grammar teaching in the classroom. Lastly, only one learner liked DDL because it was fun and not boring.

## Discussion

At this point of the discussion, the results from the previous section could help answer the first research question in which there was a statistically significant in the mean scores after DDL was used as a main method to teach grammar in the classroom. This means that learners in this study performed better towards the treatment of DDL. Additionally, the findings of this study were found to be in line with some previous scholars (e.g., [Huang, 2014](#); [Boontam and Phoocharoensil, 2018](#)) in which paper-based DDL activities in the classroom is considered as fruitful and beneficial tool in helping students acquire grammatical knowledge and language rules/patterns by themselves. In addition, the higher mean scores in the post-test revealed some interesting results that although this was the first time for all participants learning through paper-based DDL but they could perform well in the class and the test task. This supports [Huang's \(2014\)](#) study in which paper-based material prepared in advance by a teacher ([Braun, 2007](#)) found to be adventurous for learners to discover co-occurring structures that presented in the KWIC concordances.

With regard to the second research question, the results from the questionnaire show that some of the students reflect positive attitudes towards DDL activities as they found it fun and not boring ([Boontam & Phoocharoensil, 2018](#)). The results from the survey were found to be similar with a previous study of [Yepes and Krishnamurthy \(2010\)](#) that most of the learners considered DDL as a helpful method for acquiring new grammatical knowledge and wished to learn other English lessons through DDL activities ([Lin & Lee, 2015](#); [Nugraha et al., 2017](#)). Interestingly, in this current study, DDL could help students retain their long-term memory knowledge and guide them to be active learners in the classroom since they reflected DDL differed from traditional classroom ([Lin & Lee, 2015](#); [Nugraha et al., 2017](#); [Boontam & Phoocharoensil, 2018](#)). Importantly, the most important reason why they liked DDL because learners enjoyed exploring and discover language

structures/patterns by themselves. This supports [Huang's \(2014\)](#) study in which DDL paper-based material as well as teacher's scaffolding technique is beneficial for learners.

However, it is important to shed some light on the only one student who did not enjoy studying through DDL. That participant did not state the reason why he/she did not like DDL, but it could be assumed that this method is seemingly new for him/her and the use of DDL method requires students with the same level of English proficiency at least A2 level ([Boontam & Phoocharoensil, 2018](#)) to interpret the concordance lines. He/She might not be familiar with the data which can result in the difficulty in learning. In a nutshell, most participants in the survey advocated the positive attitudes of the learners towards DDL activities and considered it beneficial in learning the conditional sentences, the second condition.

In terms of cognitive grammar proposed by ([Langacker, 1987](#); [Taylor, 2002](#)), a paper-based DDL material could enhance learners' provoking skill to observe the grammar rules/patterns and usage of the conditional sentences, the second condition through the given sample sentences. By observing through the context of the search word, learners can formulate their own structures from the real use of English language structures by the native speakers from the authentic source of data. As advocated by [Long \(1997\)](#) the way of explicit teaching by focusing on only forms could result in students overwhelmed that hardly meet their needs as well as not reflect the real-life language use to learners. This present study advocates the notion of [Long \(1997\)](#) in which changing the learners' roles as language learners and language researchers could probably improve their performance in the classroom.

## Conclusion

This present study examines the effectiveness of data-driven learning (DDL) method in developing Thai undergraduate students in learning conditional sentences (the second condition) and to explore the attitudes of Thai undergraduate students towards learning conditional sentences (the second condition) through DDL method. It could be summarized that indicated that DDL method using paper-based material prepared in advance by a teacher could yield

the effectiveness of grammar learning to learners as it was statistically significant where p value is less than .05. In terms of the test scores, the mean score of the post-test is higher than the pre-test as shown in the gained score mean is 5.2. This could affirm the effectiveness of DDL used in language classroom. In terms of learners' attitudes and satisfactions towards DDL, it was found that some students considered DDL method as fun and not boring. Moreover, majority of them liked DDL because it is a good experience to discover language patterns by themselves. Also, they reflected DDL is helpful to understand the lessons and a good resource to learn new sentence structure as the second important reasons. Lastly, they found it is different from the traditional classroom. However, three students encountered some obstacles during the DDL activities but revealed no expressions in a negative way. Only one learner did not enjoy with DDL with no further explanation.

Additionally, this study has some limitations that should be acknowledged for further studies. To explain, since the participants in this study are limited to 15 people, it cannot make a generalization to other contexts but it could, at least, be used as a baseline to compare for other contexts. Moreover, the pre-test and post-test limit to only one test task which is gap filling, this cannot explore other aspects of grammar learning e.g., grammatical judgement and sentences production. Lastly, the use of questionnaire to observe the attitudes of learners towards DDL method only seems not enough since some learners did not like DDL but the researcher cannot obtain in depth information regarding problems/reasons that the learners encountered. That is why interview should be added and come into play to broaden the learners' horizons.

### **Pedagogical Implications**

The results of this current study could, at least, contribute to the improvement of teaching methods in English Language Teaching (ELT). To recapitulate, these findings could be used to develop teaching method -the inductive approach -where the target focus is on the learners. Moreover, the use of language from corpora to teach conditional sentences could promote the authenticity and awareness to the teachers/learners since the real language use does

not rely only on the strict pattern from traditional grammar. Likewise, the use of paper-based material prepared in advance by teachers could be considered as one of the effective materials to teach students. Additionally, the findings of this study could be regarded as a useful source for teachers who will be using or adapting DDL in their language classroom. On the other way round, traditional way of teaching or deductive approach should still exist but the inductive should come into play as an integration between these two approaches.

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## Appendices

### Appendix A: Paper-Based Material Conditional Sentences

No.	Sample Sentences
1.	<b>If</b> they thought it was justifiable homicide, they could set her free.
2.	People used to think <b>if</b> your child was chubby it meant they were healthy, “ he said.
3.	I drove down to a bar in Bangor a couple times to see <b>if</b> I could switch teams, but I’m just not made that way.
4.	<b>If</b> he was right, natural gas prices would be much higher.
5.	Life would be swell <b>if</b> all the slaves inhabiting a single mind worked as a team.
6.	<b>If</b> anyone learned to lie, it was Zamora.
7.	It sure would be easier <b>if</b> he didn’t t have such a fat head.
8.	I bet it would have a lot of fans <b>if</b> you did it every week with no end in sight.
9.	Finally, when it was clearer than glass that <b>if</b> I didn’t do it.
10.	<b>If</b> they couldn’t quite dance the way she wanted, she’d dazzle the audience.
11.	and that <b>if</b> I were to meet him I should not know what to say to him.
12.	Cause <b>if</b> there were, we would want to keep that to ourselves.
13.	<b>If</b> I were a cop, I think I might end my reports.

14.	<b>If</b> he were to ask me out, how would I politely refuse?
15.	<b>If</b> they did, they would only publish best sellers.
16.	Because no one would clean shit up <b>if</b> they had a million dollars.
17.	<b>If</b> it weren't for them, we would be no different than the other countries.
18.	<b>If</b> I could have a do-over "section, it really gave me insight into what...
19.	I would be a little bit frightened <b>if</b> I were those people, because its – these houses are not going to-
20.	We'd be lying <b>if</b> we said racing has a fan base close to what it did in its heyday.
21.	Well, would you know this person <b>if</b> he came into the room?
22.	Oh, no. <b>If</b> I wanted to do that, I'd call you Becky.
23.	Well, you realize that <b>if</b> Katie Couric played baseball, nine guys would be making more than she does.
24.	<b>If</b> they really cared, if the president really cared, somehow we'd have this.
25.	<b>If</b> I wasn't always there, he'd find somebody else.
26.	He said that <b>if</b> I didn't get you on the phone, that he would leave
27.	<b>If</b> there were, we would want to keep that to ourselves.
28.	<b>If</b> he were to ask me out, how would I politely refuse?
29.	Publishers and agents like to pretend they do, but <b>if</b> they did, they would only publish best sellers, and they don't.
30.	<b>If</b> it weren't for them, we would be no different than the other countries.
31.	So none of these people would be on the American border <b>if</b> they weren't coming through Mexico.
32.	<b>If</b> I were him, I would file a motion asking that an attorney be appointed.
33.	Word for Word would probably give Tolstoy a try <b>if</b> it would bring readers to the classic.
34.	<b>If</b> we crossed the lightning bug with a honeybee, we would get little honeybees.
35.	<b>If</b> we wanted to do it, we could do it, but we are too often.
36.	<b>If</b> there were to have their way, we would have no middleclass left.
37.	You think you'd jump two cops <b>if</b> they weren't checked?
38.	<b>If</b> they wanted to, he could probably stall them.
39.	<b>If</b> they gave an Oscar for Best Deadpan Reaction Shot, Bill Murray would be the winner.
40.	<b>If</b> I was a feather, I would like to be...

- From sample sentences above, which type of conditional sentences is proposed?
- List three to four patterns/structures which are employed in the sample sentences and put the number of that concordances into the end of each pattern.

Patterns/Structures	Sample Number
1.	
2.	
3.	
4.	

- Write the usage of the conditional sentences.
- Produce five sentences based on the structures learned from the sample sentences.

1.
2.

3.
4.
5.

### Appendix B: Effectiveness of Grammar Teaching through Data Driven Learning (DDL) with Undergraduate Students (Adapted from Boontam and Phoocharoensil, 2018)

As part of my final term project of “Language Usage and Cognition” at Thammasat University, I am conducting a questionnaire that explores the attitudes of learners towards learning English grammar. I will appreciate if you could complete the following questions.

#### Part 1 Respondent’s details:

- Gender: \_\_\_\_\_
- Nationality: \_\_\_\_\_
- Age: \_\_\_\_\_

#### Part 2 Attitudes of learners towards grammar learning

Directions: Please check (/) the box which best describes whether you agree or disagree with each statement using the following scales;

5 = Strongly agree;      4 = Agree;      3 = Neither agree nor disagree  
 2 = Disagree;      1 = Strongly disagree

No.	Statements	5	4	3	2	1
1.	I find grammar learning in this way is fun and not boring.					
2.	I think that grammar learning is more challenging than other traditional method.					
3.	Grammar learning is difficult for me.					
4.	Learning grammar this way makes me understand lesson better.					
5.	When I learn grammar, I prefer teacher-centered method to learner-centered method.					
6.	I like to discover the language pattern by myself.					
7.	I can retain what I have learned in the long term after studying grammar this way.					
8.	I was encouraged to actively think, express my idea and speak English during class activities.					
9.	I completely understand how to use conditional sentences: the second type by learning grammar this way.					
10.	I think that I obtain more knowledge in terms of new sentence structures from studying the sample sentences.					
11.	In the class, I think that I understand the lesson better when teacher used scaffolding techniques.					
12.	I want to study other English lessons through grammar learning method in the future.					

#### Part 3 Problems and suggestions

1. Did you encounter any problems in learning English grammar in the classroom?

Yes, I did.       No, I did not. (If no, then skip no. 2)

2. Please state your problem(s).

\_\_\_\_\_

3. Do you like studying through this method?  
 Yes, I do.       No, I do not. (If no, then skip no. 4)
4. Please choose only one best reason why you like this method.  
 It is good experience to discover the language pattern by myself.  
 It is challenging.  
 It is good resource to learn new sentence structures from studying the sample sentences.  
 It is very different from the traditional classroom.  
 It is fun and not boring.  
 It helps me understand the lesson better.  
 Etc. \_\_\_\_\_
5. Suggestions and recommendations (Optional)
- \_\_\_\_\_

### Appendix C: Pretest and Posttest

(Extracted from the course book entitled “Fundamental English” Kamphaeng Phet Rajabhat University)

#### Part I: Rewrite the sentences and keep the same meaning.

1. I don't know his address. I can't contact him.  
 If I ..... his address, I could contact him.
2. He is ill. He can't go skiing.  
 If he wasn't ill, he ..... skiing.
3. He doesn't like tomatoes. He won't eat the salad.  
 If he ..... tomatoes, he would eat the salad.
4. I travel on my own because I speak English.  
 I wouldn't travel on my own if I ..... English.
5. We don't have enough room in our house. You can't stay with us.  
 If we ..... enough room in our house, you could stay with us.
6. You aren't lucky. You won't win.  
 If you were lucky, you .....
7. I go to bed early because I work so hard.  
 I wouldn't go to bed early if I ..... so hard.
8. I am eighteen. I can vote.  
 If I ..... eighteen, I couldn't vote.
9. Go to Corfu. You may like it.  
 If you went to Corfu, you ..... it.
10. You'll manage it. Don't panic.  
 You would manage it if you .....

#### Part II: Complete the sentences the verbs in the brackets.

1. I can't tidy my room now. If I ..... more free time, I ..... it. **(have | tidy)**
2. My job isn't well-paid. Provided that I ..... a lot of money, however, I ..... round the world. **(earn | travel)**
3. I spend a lot of time learning English. If I ..... English, I ..... studying Spanish or French. **(not learn | try)**

4. I have to meet my business partner. But if I ..... some time to spare, I ..... a museum. (**have | visit**)
5. I don't know if my friend needs help. Suppose he ..... my help, I ..... (**need | not refuse**)

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