



**Effects of Guided Inductive and Deductive Instruction
on Grammar Learning in an EFL Context**

Wanwisa Watcharakorn

**A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of
Master of Arts in Teaching English as an International Language
Prince of Songkla University
2018**

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and is not being currently submitted in candidature for any degree.

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ชื่อวิทยานิพนธ์	ผลของการเรียนการสอนไวยากรณ์ โดยวิธีอุปนัยและนิรนัย ในบริบทที่ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ
ผู้เขียน	วันวิสา วัชรการ
สาขาวิชา	การสอนภาษาอังกฤษเป็นภาษานานาชาติ
ปีการศึกษา	2560

บทคัดย่อ

วัตถุประสงค์ของงานวิจัยกึ่งทดลองนี้ คือเพื่อศึกษาผลการเรียนรู้จากวิธีการสอนแบบอุปนัย และแบบนิรนัยในการสอนโครงสร้างไวยากรณ์ภาษาอังกฤษ จำนวนสี่โครงสร้างคือ Past perfect, Passive voice, Reported speech, และ Conditional sentences วัตถุประสงค์อีกประการหนึ่ง คือเพื่อศึกษากลยุทธ์การเรียนภาษาอังกฤษที่ผู้เรียนใช้ในการเรียนไวยากรณ์ทั้งสี่โครงสร้าง กลุ่มตัวอย่างคือนักเรียนชั้นมัธยมศึกษาปีที่สามที่มีระดับความสามารถทางภาษาอังกฤษต่ำ จำนวนสองห้อง รวมจำนวน 50 คน กลุ่มตัวอย่างทั้งสองกลุ่มถูกสอนโดยวิธีการสอนที่แตกต่างกัน กลุ่มที่หนึ่ง ใช้วิธีการสอนแบบอุปนัย กลุ่มที่สอง สอนแบบนิรนัย โดยทั้งสองกลุ่มจะเรียนไวยากรณ์ประเด็นเดียวกัน เครื่องมือที่ใช้ในการเก็บข้อมูลประกอบด้วย แบบทดสอบก่อนและหลังเรียนซึ่งเป็นข้อสอบชุดเดียวกัน ใช้ทดสอบกับผู้เรียนทั้งหมด 50 คน และการสัมภาษณ์แบบกระตุ้นความจำ จากกลุ่มตัวอย่างทั้งสองกลุ่ม กลุ่มละหกคน รวมทั้งหมด 12 คน ผู้วิจัยใช้ T-test เพื่อหาความต่างของคะแนนที่ได้ก่อนเรียน และหลังเรียน ผลการเปรียบเทียบพบว่าโดยรวมคะแนนหลังสอบของทั้งสองกลุ่มมีความแตกต่างอย่างมีนัยสำคัญ ($t=20.88, p<.01$ ในกลุ่มการสอนแบบอุปนัย และ $t=25.040, p<.01$ ในกลุ่มการสอนแบบนิรนัย) และเมื่อพิจารณาคะแนนในแต่ละโครงสร้างไวยากรณ์ พบว่าสามโครงสร้างคือ Past perfect, Passive voice, และ Conditional sentences ที่คะแนนก่อนและหลังเรียนของทั้งสองกลุ่มมีความแตกต่างกันอย่างมีนัยสำคัญ ข้อมูลจากการสัมภาษณ์พบว่าผู้เรียนทั้งสองกลุ่มใช้กลยุทธ์การเรียนภาษาอังกฤษที่ต่างกัน กลุ่มที่สอนโดยวิธีอุปนัยใช้กลยุทธ์ด้านการทดแทนและกลยุทธ์ด้านพุทธิปัญญามากที่สุด ในขณะที่กลุ่มที่สอนโดยวิธีการสอนแบบนิรนัยใช้กลยุทธ์ด้านการจำมากที่สุด ผลการศึกษาการใช้กลยุทธ์ในการเรียนภาษาอังกฤษทั้งสี่โครงสร้างของทั้งสองกลุ่มมีความหลากหลายและแตกต่างกันออกไปตามลักษณะของแต่ละโครงสร้างไวยากรณ์ กล่าวคือกลยุทธ์ด้านพุทธิปัญญาและกลยุทธ์ด้านการทดแทนถูกนำมาใช้เยอะที่สุดในการเรียนโครงสร้าง Past Perfect และ Conditional sentences (50 - 58%) ในการเรียนโครงสร้าง Past Perfect และ 55.37%-56% ในการเรียน Conditional sentences ในขณะที่กลยุทธ์ด้านพุทธิปัญญาถูกผู้เรียนทั้งสองกลุ่มนำมาใช้ในการเรียนโครงสร้าง Reported speech (57.78%-68%) กลยุทธ์การเรียนที่ถูกใช้น้อยที่สุดเมื่อเปรียบเทียบกับกลยุทธ์การเรียนอื่นๆ คือกลยุทธ์ด้านการจำ แต่ถูกนำมาใช้เยอะที่สุดในการเรียนโครงสร้างเรื่อง Passive voice (55.56%) ผลการวิจัยสรุปว่า นอกจากวิธีการสอนที่ต่างกันแล้วยังมีปัจจัยอื่นๆ ที่ส่งผลกระทบต่อผลสัมฤทธิ์ทางการเรียนของผู้เรียนอีกด้วยเช่น โครงสร้างไวยากรณ์

ที่ใช้สอนรวมไปถึงกลยุทธ์การเรียนรู้ที่ผู้เรียนนำมาใช้ ดังนั้นนอกจากจะเลือกวิธีการสอนที่เหมาะสมแล้ว การพิจารณาปัจจัยต่างๆ ที่สามารถส่งผลกระทบต่อผลสัมฤทธิ์ทางการเรียนของผู้เรียนจึงเป็นสิ่งสำคัญที่ผู้สอนควรคำนึงถึง สำหรับการทําวิจัยครั้งต่อไปการศึกษาประสิทธิผลของการสอนทั้งสองแบบในโครงสร้างที่แตกต่างกันออกไปในกลุ่มนักเรียนที่มีความสามารถทางภาษาอังกฤษที่ต่างกันจึงเป็นประเด็นที่ควรศึกษาเพิ่มเติม รวมไปถึงศึกษาปัจจัยอื่นๆ ที่อาจจะส่งผลกระทบต่อหรือเป็นอุปสรรคต่อการพัฒนาการเรียนไวยากรณ์ภาษาอังกฤษ

คำสำคัญ : การสอนแบบอุปนัย, การสอนแบบนิรนัย, การเรียนไวยากรณ์, กลยุทธ์การเรียนรู้ภาษาอังกฤษ

Thesis Title	Effects of Guided Inductive and Deductive Instruction on Grammar Learning in an EFL Context
Author	Miss Wanwisa Watcharakorn
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ABSTRACT

This quasi-experimental study attempted to explain how students benefit from two different approaches to grammar instruction—guided inductive and deductive instruction by investigating learning outcome and learning strategies of 50 Thai Mathayom 3 students whose English proficiency was low. Twenty-six of them were taught with guided inductive and 24 with deductive instruction. Four grammatical structures –Past perfect, Passive voice, Reported speech, and Conditional sentences – were targeted and the same content was used in both groups. To explore the learning outcome, participants’ pretest and posttest scores were compared. To investigate the learning strategies used, 12 participants (six from each instructional approach) were invited to take part in stimulated recalls after each lesson. The analysis of pretest and posttest scores showed that, overall, the participants benefited from both guided inductive and deductive instruction. Looking closely across the four grammatical structures, significant differences were found for the three target grammatical structures: Past Perfect, Passive voice, and Conditional sentences. Stimulated recall data, in addition, showed that the participants in each group engaged in different strategies while learning. A higher number of the participants in the deductive group reported using memory strategies than those in the guided inductive group. Cognitive and compensation strategies, however, were used by a higher number of the participants in the guided inductive group. With regard to learning strategies, it was found that there is a variation in strategies used across the four target structures. Compensation strategies were the most frequently used of all the strategies in learning Past perfect and Conditional sentences (50 - 58% for Past perfect and 55.37%-56% for Conditional sentences). Cognitive strategies were the most frequently used in Reported speech (57.78%-68%). Memory strategies, however, were used the least frequently (55.56%) in learning Passive voice. The study concluded that not only do the teaching approaches

contribute to success in grammar teaching, but other factors, such as the target structures and learning strategy use do affect learning achievement. The selection of teaching approach should therefore take these factors into account. For further research, it would be interesting to investigate the effectiveness of the grammar instruction which focuses on different target structures and the students with different levels of proficiency as well as other factors that may either facilitate or obstruct grammar development.

Keywords: Guided Inductive Instruction; Deductive Instruction; Grammar Learning; Language Learning Strategies

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Finally, I would like to thank all M.A. lecturers and all of my colleagues whose names are not mentioned here for their help and care. Words fail me to express my gratitude to my parents, who always gave me their wholehearted care, consistent encouragement, and inspirational support. You are the reason of my success.

Wanwisa Watcharakorn

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LIST OF PAPERS

This thesis is based on the following papers:

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LETTER OF ACCEPTANCE



Wanwisa Watcharakorn and Dr. Anchana Rakthong
 Faculty of Liberal Arts
 Prince of Songkhla University, Hat Yai, Songkhla, Thailand

31/05/2018

Dear authors,

We are pleased to inform you that your article entitled, **“Guided Induction Versus Deductive Instruction: Their Effect on EFL Students’ Grammar Learning”** has been accepted for publication in conference proceedings of the ICES 2018: International Conference on English Studies to be held in Krabi, Thailand during June, 28-29, 2018.

On behalf of the editorial board, I express gratitude for publishing your work with ICES and it is our hope that you will continue to publish with us.

Thank you.

Yours faithfully,

Dr. Pittayatorn Kaewkong
 Chair of Conference Organizing Committee
 ICES 2018

LETTER OF ACCEPTANCE



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[Veridian Journal] Submission Acknowledgement

1 ข้อความ

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Wanwisa Watcharakorn:

Thank you for submitting the manuscript, "Does Using Similar Content but Different Approaches Result in Different Strategies and Different Achievement? Comparing Deductive and Guided Inductive Grammar Teaching" to Veridian e-Journal ฉบับภาษาไทย สาขามนุษยศาสตร์ สังคมศาสตร์ และศิลปะ และฉบับ International Humanities, Social Sciences and arts. With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

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1. Introduction

Grammar, according to Chalker and Weiner (1994), is the whole system of a language which includes its syntax, morphology, semantics and phonology. It is explained in relation to the way in which words are put together to form phrases, clauses or sentences (Shirzad, 2016). Grammatical knowledge has been regarded important in language learning as it is the basis of a set of language skills used in communication, i.e., listening, speaking, reading and writing (Corder, 1998). In oral communication, it enables interlocutors to understand others' words and express their own thoughts successfully.

In reading, grammar enables students to completely understand how the sentences related in a paragraph, a passage, and a text. Also, the students will be able to form meaningful sentences in the context of writing if they know grammar. Therefore, they can communicate in a written form successfully. In vocabulary learning, grammatical knowledge will help students to effectively combine words and formulate clear and understandable phrases and sentences. Therefore, it is possible to explain that with grammatical knowledge, students will be able to form meaningful and communicative statements and expressions (Thornbury, 1999), which will help them to communicate more successfully in communicative setting (Doff, 2000).

Regarding its important role in language learning, grammar has long been emphasized in L2 instruction. However, several concerns (see e.g., Ellis, 2011; Al-Mekhlafi & Nagaratnam, 2011; Nazari, 2013) have been expressed over grammar instruction. One of them is how grammar should be taught in language classroom or whether it should be taught implicitly or explicitly.

According to Brown (2007), implicit grammar teaching involves teaching the students a certain topic in a suggestive or implied manner. The teacher gives students instruction with several examples and encourages them to create their own schema in order to understand the rule instead of memorizing it. The concept of implicit grammar teaching is thought to be in line with the way children learn a native language. That is, by being with native speakers, absorbing the language around them, normally without a lot of explanation and information, children can internalize rules and use them correctly later on.

Explicit grammar teaching, on the other hand, is a highly structured way of teaching. It involves the way in which a teacher directs students' attention to a particular learning objective and teaches them target forms. The target structures are taught by the teacher in a logical order through his or her demonstration, explanation, and practice.

A number of studies (e.g., Swain, 2000; Norris & Ortega, 2001; Macaro & Masterman, 2006; Akakura, 2012) have investigated the effects of explicit and implicit grammar instruction, and they found that explicit instruction contributed to better results. They claimed that some explicit teaching processes such as error correction and explanations could contribute to higher level of mastery of grammar, especially for English as a Foreign Language (EFL) students, who have less exposure to the target language, compared to English as a Second Language (ESL) students.

A meta-analytic review by Norris and Ortega (2001) also clearly illustrates an advantage of explicit instruction. This review has concluded that the teaching and learning language in a formal context and the explicit component within a basically communicative methodology will make a considerable contribution to the accomplishment of grammar learning.

Explicit grammar instruction, as Ellis (2006) has pointed out, can be conducted in different forms including focus-on-forms, focus-on-form, deductive and inductive approaches. In the focus-on-forms approach, grammar is taught deliberately from easy and simple structures to more difficult and complex ones. The teacher often pre-selects grammatical structures and the students are expected to learn intensively (Wilkins, 1976). Conversely, in the focus-on-form instruction, grammar is learned through a communicative and meaningful context when the communication is going on (Long, 1991).

While the focus-on-forms and focus-on-form centered on the complexity of grammatical structures, the inductive and deductive approaches deal with how target structures should be presented to students. Deductive instruction involves presenting a grammar rule explicitly and directly to the students, followed by rule drilling activities. On the contrary, in the inductive instruction, the students are given examples of

sentences or texts containing target forms and students are directed to pay attention to and summarize the rules themselves (Shaffer, 1989).

In practice, inductive instruction in language classroom takes many forms and several techniques have been employed. Some teachers present students with communicative texts containing target structures and let the students induce the rule by themselves without any guidance or help (Rosa & O'Neill, 1999; Shaffer, 1989). Others use guided inductive techniques to help the students to focus their attention on the target structures. The techniques used include asking leading questions and highlighting the target structures appearing in the texts (Herron & Tomasello, 1992).

Although deductive and inductive instruction have received much attention in previous research (see e.g., Wang, 2012, Jean & Simard, 2013; Motha, 2013) their benefits and disadvantages remain largely unclear. The deductive instruction, as Fischer (1979) explains, is a teacher-led approach. The students in this instruction may be required to utilize the rules despite they do not completely understand the target structures. Furthermore, as in the deductive instruction, rules are more emphasized than meaning, the students tend to take a passive role in their learning process.

The inductive instruction, on the other hand, is considered to be more learner-centered and students are more likely to be encouraged to play an active role. Since the students have to explore and induce the rules by themselves, they may have more understanding of the grammatical rules (Brown, 2007). However, some students at a beginning level may find it difficult to discover the rules, especially complex rules and this may discourage or demotivate them in trying to engage in their learning process (Seliger, 1975).

In Thailand, English is taught as a compulsory subject (Basic Education Core Curriculum B.E. 2551, 2008). Most of Thai students spend more than twelve years studying English in school since they were in elementary school, particularly in learning grammar. However, they do not seem to be able to use their grammar accurately in their communication, i.e., in their writing or speaking. This might be because they lack grammatical knowledge which forms the basis for English communication. Two of the factors that may underlie this problem, as Geringer (2003) explains, could be teachers,

themselves, and their teaching approaches. To be more successful in grammar teaching, teachers should employ a teaching approach that suits their students.

As mentioned earlier, two approaches for grammar instruction which have received much attention in previous research are deductive and inductive instruction, both of which have both advantages and disadvantages. To be successful in teaching grammar, teachers should use an appropriate approach that can enhance the process of learning. With Thai students, however, it is not clear how the two approaches would benefit them. Therefore, this study was conducted to compare the effects of two types of explicit instruction— guided inductive and deductive in the teaching of grammar in a Thai context. Particularly, the aim was to explore the extent to which the students benefit from each instructional approach, the factors affecting in the success or failure in their learning, strategies, techniques, or tactics that students activated to learn target language.

1.1 Purposes of the Study

There were three main objectives in this study:

1. To investigate the effects of guided inductive and deductive instruction on EFL students' learning of grammar.
2. To investigate the learning strategies the students activate to learn the target structures in each instructional approach.
3. To explain how the students benefit from these two instructional approaches by investigating learning outcome and learning strategies.

1.2 Research Questions

1. Are there any significant differences in students' learning outcome when compared between the guided inductive group and the deductive instruction group and across four grammatical structures?
2. What learning strategies do the students activate while they are learning in each instructional approach?

3. Are the learning strategies different when compared between the two instructional approaches and across four grammatical structures?

1.3 Scope and limitations of the Study

This study was carried out in one particular context, which was a public high school in Hatyai, Songkhla. Due to time limitation (14 weeks), only four grammatical structures were investigated and compared. And there were only 50 participants in this study. A study conducted in a different situation, context and location, and with different age groups and proficiency levels may have different results. Consequently, the results were only suggestive rather than conclusive.

1.4 Significance of the Study

As mentioned earlier, the purpose of this study was to investigate the effects of guided inductive and deductive instruction on students' learning of grammar. In particular, it aimed to explain to what extent students benefited from different types of instructional approaches and what learning strategies the students activated to learn the target structures. The reason was to provide a better understanding of grammar instruction in EFL contexts as well as to help students learn grammar more effectively. It is also hoped to provide guidelines for classroom teachers to prepare their teaching materials and/or choose teaching approaches that best benefit their students.

1.5 Definition of Key Terms

1.5.1 Guided inductive instruction refers to an inductive teaching approach in which students are presented with communicative texts containing target forms and the teachers lead students' attention to the target forms by asking questions, using input textual enhancement or highlighting the target forms to make students notice and pay attention to them.

1.5.2 Deductive instruction refers to a deductive teaching approach, where the teachers explicitly present the target forms to the students at the beginning of the lessons. It begins by giving students the rules and letting them work on the target forms by supplying grammar-drilling exercises.

1.5.3 Learning strategies are strategies, techniques, or tactics that students directly used to tackle and to learn the tasks at hand while learning the target language.

2. Literature Review and Related Studies

2.1 Guided Inductive and Deductive Instruction to Grammar Teaching

One major concern in the field of second and foreign language education is how grammar instruction should be carried out. There has been a great interest of both researchers and teachers to find out how to best teach grammar. Over decades, the question of whether grammar should be taught implicitly or explicitly has received much attention and a number of studies have been conducted to search for the best way to deliver grammar to students.

According to Ur (2009), an implicit instruction means getting students to expose to the grammatical forms and meanings or encouraging them to use those forms and meanings without the explicit discussion about the rules. On the other hand, an explicit instruction concerns the verbal explanation of forms and usage. While the aim of implicit instruction is to assist students induce the rules without awareness, an explicit instruction entails teaching a certain rule during the learning process and the students are encouraged to develop metalinguistic awareness of that rule (Ellis, 2009).

A number of studies have investigated the effect of explicit and implicit grammar instruction on students' learning achievement, and they found that explicit instruction contributed to better results, especially in the contexts where English is used as a foreign language (EFL) (see a meta-analytic review by Norris & Ortega, 2001; Swain, 2000). These studies suggest that the procedures in explicit teaching such as error correction and explanation and the awareness raising of the target form help students to pay attention to and understand the target forms better, resulting in greater

success in grammar learning. In an EFL context like Thailand, where most students have little or no exposure to the target forms in their everyday life, it seems that explicit instruction is essential.

According to Ellis (2006), there are two main explicit teaching methods: deductive and inductive approaches. In the deductive approach, a grammar rule is presented explicitly to the students by teachers, followed by rule drilling activities. On the contrary, in the inductive approach, the students are given examples of communicative texts containing target forms e.g., reading passages or dialogues, and students are directed to pay attention to and summarize the rules themselves (Shaffer, 1989). The taxonomy of approaches to teaching grammar can be represented in Figure 1.

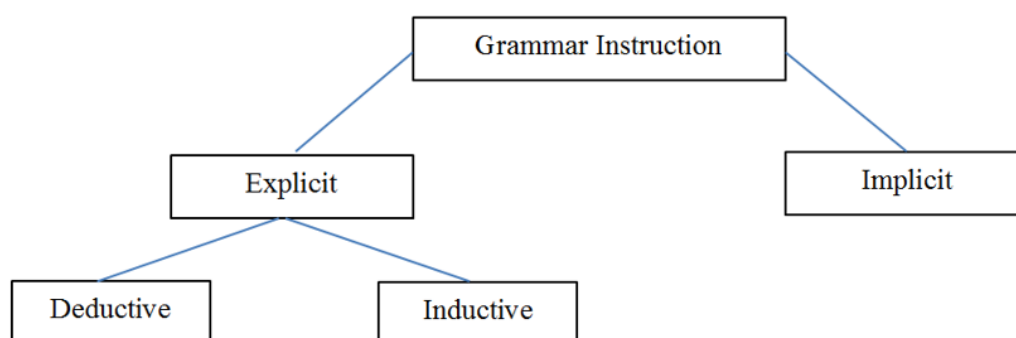


Figure 1 The taxonomy of approaches to teaching grammar

Different instructional approaches offer different teaching procedures, and each procedure seems to have different benefits and limitations. The deductive instruction is considered to support a teacher-led teaching style and passive learning (Fischer, 1979). Although target forms and rules are supposed to be explained by the teachers, it is doubted that the students in the deductive instruction precisely understand target forms and use them correctly when they use the language for actual communication. The students may not completely understand the concepts of the target language. Furthermore, the rules are more emphasized than meaning in the deductive instruction, and the students therefore take a passive role in the learning process. Nevertheless, the

teachers can get straight to the main point and can be time-saving, and it is suitable for the students who prefer to be directly given the target forms (Thornbury, 1999).

In contrast to the deductive instruction, inductive instruction is a learner-centered style of teaching. In this approach, examples containing the target form are presented to the students and then the students are required to induce the target forms by themselves. With this concept, inductive instruction is considered to initiate an active role of students in their own learning process (Brown, 2007). As previously mentioned, the role of teachers is a facilitator who helps and directs students' attention to the target forms, therefore, it can be more time and energy consuming. However, as the students might arrive at the incorrect conclusion and produce an incorrect or incomplete rule, this teaching approach can bring about misunderstanding of some content if the teachers do not closely monitor what the students are learning. Also, inductive instruction might frustrate students who rely on the explanation from the teachers or prefer to be taught by deductive instruction (Widodo, 2006).

The application of completely inductive instruction with students at a beginning level could be very demanding, regarding that they have a limited knowledge of the target language. They may find it difficult to discover the rules by themselves, especially complex ones. They may encounter problems when they are engaging in the learning process (Seliger, 1975). To help this group of students to learn more effectively, guided inductive instruction is developed, with the aim of helping raise students' awareness of the target forms (Smart, 2014). Several techniques are used in this approach, including asking several leading questions (Herron & Tomasello, 1992), and using input textual enhancement or highlighting the target forms to make students become interested in them (Lee, 2007; Lee & Huang, 2008).

In terms of teaching procedures, the literature (e.g., Larsen-Freeman, 2001; Ur, 2009; Brown, 1980) suggests that deductive and guided inductive instruction should include at least 3 important steps: presentation, practice, and production. Presentation is the first step in which teachers present target forms to the students. In the inductive instruction, however, the target form is not explicitly explained by the teachers as it is

in the deductive instruction, but it is presented in a communicative context where the students have to notice it themselves. The second step is practice. In this step, students will be given activities or tasks that provide them with an opportunity to practice the form presented to them in the first step. The last step is production. It is where the students are encouraged to apply the target language in contexts or in the set up activities. There have been many studies applying these three steps in teaching.

Arifin (2016), for example, included the three steps in his five teaching stages of tenses, and both deductive and inductive instruction were used to investigate the effectiveness in teaching 40 EFL students. These stages included the motivating stage, presentation, practice, summary or practice, and assessment. The motivating stage aimed to attract the students' attention to the topic. Secondly, in the presentation stage, the lesson was presented and then the teacher gave some explanation about the tense, wrote down the form, and explained how to use it. The teacher then gave students the examples of tense usage. In the third stage, the target form was practiced. The teacher provided exercises or tasks for the students to practice the target tense. Fourthly, in the summary stage, activities, such as writing about daily routines on the board, were provided as the reviewing lesson. Lastly, in the assessment stage, the students had to choose one of the topics provided by the teacher and wrote a paragraph about it.

The same stages were used in inductive instruction, excluding the presentation stage. Instead in the latter instruction, the teacher asked the students questions related to the lesson and wrote them on the board. After that the teacher elicited the grammar rules and asked some individual students or the whole class to summarize the target form and rules. The results showed that the deductive group achieved better results than did the inductive group and that the deductive feedback helped the students to learn more complex tenses such as Present perfect and Present continuous better. Therefore, the study concluded that the explanation of tenses by using deductive instruction is more effective.

Tammenga-Helmantel and Bazhut (2015) investigated the effectiveness of both teaching approaches in the instruction of subjunctive for Reported speech in German. They implemented three steps: exploration, explicit explanation of rules, and the practicing phase. The exploration step in the inductive instruction involved presenting

a text containing a high frequency of target structures to the students. The teachers let the students construct the rules by themselves with some written instructions to guide them to the target form. Examples of the instructions were reading the text, focusing on the underlined words, and answering what happens to the verb when being used in Reported speech. After that the teacher helped them to summarize the rules. The students then went through the practicing stage by reading the text, analyzing the verbs, indicating subjects, and identifying the stem of the verb.

Overall, both deductive and inductive instruction follows quite similar procedures in teaching. The main difference between the two is that the inductive instruction emphasizes presenting target structures in communicative contexts, whereas in the deductive instruction, the presentation of the grammar rules is done in the first step of teaching, followed by the same practicing phase. The same exercises and the equal amount of time are allocated as for the inductive and deductive instruction. The results revealed that both instructional approaches had a positive effect on the learning outcome.

A number of studies have been conducted to examine the effectiveness of deductive, inductive and guided inductive instruction in the teaching of grammar. So far, however, there is no conclusive finding on the effectiveness of these teaching approaches. Erlam (2003) compared the effects of deductive and inductive instruction on the acquisition of direct object pronouns in French as a second language. Pretest-posttests and a delayed posttest were used to collect data from 69 secondary school students who never received any instruction on direct object pronouns. The participants were divided into three groups and randomly assigned to one of the three experimental conditions: deductive, inductive and form-focused instruction, and focus-on-forms (controlled group). Two posttests were given to all the participants in the three groups; one was immediately after the experiment and the other was six weeks delayed. The results showed that the deductive group achieved significantly greater marks than did the inductive and control groups.

Dankittikul and Laohawiriyanon (2018) compared the effects of deductive and inductive approaches in teaching logical connectors to 47 Thai university students. The

participants in the deductive teaching group were taught with traditional teaching materials. A paper-based concordance, on the other hand, was applied as a teaching material in the inductive group. The participants' attitude towards the usefulness of paper-based concordance was also investigated. Their results support Tammenga-Helmantel and Bazhut's (2015) conclusion that the deductive teaching was as effective as paper-based concordance instruction which employed an inductive approach.

Additionally, Gorat and Prijambodo (2013) carried out a quasi-experimental study to compare the effectiveness of deductive and inductive instruction as well as the students' perceptions towards these approaches in teaching conditional sentences. Sixty-four students (32 in each group) participated in this study. The Conditional sentence test was administered as the pretest and posttest to examine the participants' achievement. The results showed the inductive approach had a greater effect on both learning performance and preference.

Haight, Herron, and Cole (2007) and Vogel, Herron, and Cole (2011) adopted a four-stage approach for teaching grammar or PACE model from Adair-Hauck et al. (2010) in the guided inductive instruction for French college students. PACE involves the use of the text, story or contextualized examples containing targeted structures to teach grammar. Firstly, P stands for Presentation of the target form, a written or oral narrative consisting of the grammatical structure to be presented. Secondly, A stands for Attention. After the presentation, the instructors focus students' attention on a target form through practice sessions and examples. Thirdly, C or Co-construct is the way that instructors help the students to collaborate on understanding of the grammar rules by asking guided questions. Finally, E or Extension means instructors increase the students' understanding of the rules by giving them a chance to practice the grammatical structure that has just been discussed through activities.

In study done by Haight et al. (2007), a counterbalanced design was carried out to investigate the effect of deductive instruction and guided inductive instruction on teaching eight grammatical structures in college French classroom with 47 French students. Eight grammatical structures were taught to the participants (four structures with deductive instruction and another four structures with guided inductive

instruction). At the beginning of the treatment phase, a questionnaire was used to collect data on the students' personal information and background in language education, with a grammatical pretest. During the experiment, an immediate quiz, a fill-in-the blank task, was administered after the instruction of each grammatical structure. Fourteen weeks after that, the posttest, a written multiple task, was administered to measure the retention of grammatical structures. The results indicated that in short term, the participants benefited from the guided inductive instruction. The results supported the use of guided inductive instruction to teach grammar at the beginning level of foreign language classes.

Vogel et al. (2011), on the other hand, compared the effect of the deductive and guided inductive instruction on short and long-term learning of 10 grammatical structures. The students' perceptions towards the two instructional approaches were also examined, and were correlated with the scores obtained in each approach to investigate possible relationships. The results partially confirmed the finding of Herron and Tomasello (1992) and Haight et al. (2007) that guided inductive instruction had a significantly greater effect on short-term learning of French grammatical structures. In the long-term, the findings showed that the relationship between preferences and performances were not significant. Although students appeared to prefer a deductive instruction, the guided inductive instruction has helped the students to perform significantly better than the deductive instruction.

In terms of teaching methods, the literature review shows that there are two different methods used in the deductive and guided inductive instruction. One is 3 Ps and the other is PACE. Comparing between the two it was found that they are some overlapping steps. Presentation, Attention, and Extension in PACE are relevant to Presentation, Practice, and Production in 3Ps. The main difference found between these two methods is Co-construct which is added in PACE. At this stage, the teacher will ask the question related to the forms and encourage the students to induce the rules themselves. As this stage leans towards inductive teaching, to avoid this problem, this study, therefore, used 3Ps—Presentation, Practice, and Production.

2.2 Language Learning Strategies

Learning strategies have been differently defined. For example, Ortega (2009), Atkinson (2011), Michell and Myles (2013) described learning strategies as methods or techniques that students use or apply to learn a target language. According to Oxford (1990), learning strategies are defined as “specific actions taken by the learners to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations” (p.8).

Learning strategies are also differently classified. According to Ellis (1994), the most comprehensive classification of learning strategies is proposed by Oxford 1990. Oxford (1990) separates learning strategies into two main categories –direct strategies and indirect strategies. Direct strategies are strategies that are used directly in a learning process to tackle learning tasks at hand. Indirect strategies, as they are named, indirectly give support for language learning. This study, however, focused only on direct strategies, which the students used to learn the tasks given to them. This was to understand how the students approached the tasks and what made them succeed or fail in learning new content.

Direct learning strategies are subdivided into three main groups: memory, cognitive, and compensation strategies. Memory strategies are what students use to store and bring back information in order to help them remember new information. Cognitive strategies are techniques that help students to better understand a target form and produce new language. Compensation strategies are applied to assist students to bridge gaps in their knowledge (Oxford, 1990).

There have been many studies investigating the use of learning strategies in association with proficiency levels. For example, Bremner (2016) investigated the relationship between the strategy use and level of proficiency. The Strategies Inventory of Language Learning questionnaire (SILL) was applied to collect the data from 149 university students. The results revealed that the most activated strategies were compensation and metacognitive whereas affective and memory strategies were the

least activated strategies. Students who had high proficiency level reported using learning strategies more than did the lower ones.

Regarding the investigation of learning strategies in grammar learning, Supakorn, Feng and Limmun (2018) examined the grammar learning strategies of two different groups of students: Chinese and Thai students. The participants were 168 students studying in grade 11. They were asked to take a grammar test and complete a grammar learning strategy questionnaire. The findings showed that the high proficiency level students reported using memory and cognitive strategies more frequently than did the lower ones. The results also indicated that the Thai students activated learning strategies more frequently than the Chinese students.

Regarding the use of learning strategies, related previous studies tend to report on what strategies were used and to what extent the use of strategy is significantly associated with learning achievement. It seems to be clear that better students are likely to use more learning strategies than poorer ones. However, it remains largely unclear why some students did not use the strategies even when they have been trained to or even when they used strategies, why some students were not as successful as they should have been. To provide a better understanding on this issue, this study was therefore extended to investigate the strategies that the students used in their attempt to understand the grammar lessons delivered to them.

To sum up, although a number of studies have been conducted to search for the best way to deliver grammar to students, the results have presented no consensus on the approach that is better or more beneficial (Erlam, 2003; Haight et al., 2007; Vogel et al., 2011; Gorat & Prijambodo, 2013; Tammenga-Helmantel & Bazhut, 2015). Richards (2014) explains that the grammar learning process is complex and there are many different aspects to be considered. Due to this, no single teaching method could claim to be more important than others (Ellis & Shintani, 2014). Richards (2014) in particular states that using a variety of teaching approaches would be more beneficial since it could better serve a group of students with different learning styles.

Taking what the literature suggests into account, this study aims to investigate the effects of these two instructional approaches, i.e. guided inductive and deductive instruction, and explain how the students benefit from them by investigating their learning outcome and learning strategies. While learning outcome is expected to reveal the extent to which the students benefit from each instructional approach, the use of learning strategies, according to Oxford (1990), can point to factors that could make the students either succeed or fail in language learning.

3. Research Methodology

This was a quasi-experimental study and to achieve the purposes of this study, both quantitative and qualitative data collection methods were used. The quantitative data which comprised pretest and posttest scores, were to investigate the learning gains in both guided inductive and deductive instruction. The qualitative data which were obtained from stimulated recalls were to study learning strategies students activated in learning the target structures.

3.1 Participants

Two intact classes of 50 Thai students studying in grade 9 (Mathayom 3) at a public school in southern Thailand, called Tessaban 4 (Wat Klongrien) School, were chosen to participate in this study. All the participants had studied English for an average of nine years. Generally, their English proficiency was low. As indicated by their means scores of 59.24 from their previous course in semester 2, 2017. As the study aimed to improve students' grammatical knowledge, participants with low grammar knowledge were targeted, these participants, therefore, were purposefully selected on the basis of their grammatical knowledge. There were 26 students in one class and 24 in the other. Class one was randomly assigned to the guided-inductive instruction group (GI group) and the other was in the deductive instruction group (DI group).

Additionally, to ensure that the participants in both groups were on the same footing when starting the experiment, the comparison of their English ability was made. Their pretest scores were compared by the use of independent t-test. The result showed that there was no significant difference in the performing scores of the students in both

groups ($t=0.569$, $p > .05$). None of them, as indicated in the background questionnaire, attended tutorial classes after school or on weekends during their participation in this research.

3.2 Data-collection Procedures

Figure 2 provides an overall picture of how the experiment was carried out and when the data were collected. All the procedures of data-collection took place in the classroom setting during the experimental phase within 14 weeks. A quasi-experimental design with two groups of participants was applied in this study. One group received guided inductive instruction and the other had deductive instruction. A pretest was administered at the beginning (week 1) and the posttest was at the end of the experimental phase to assess participants' learning gain in each group and compare between the two groups –the guided inductive and deductive instruction. In addition, stimulated recalls were immediately conducted after each lesson to investigate the learning strategies the participants activated to learn the target structures in each instructional approach.

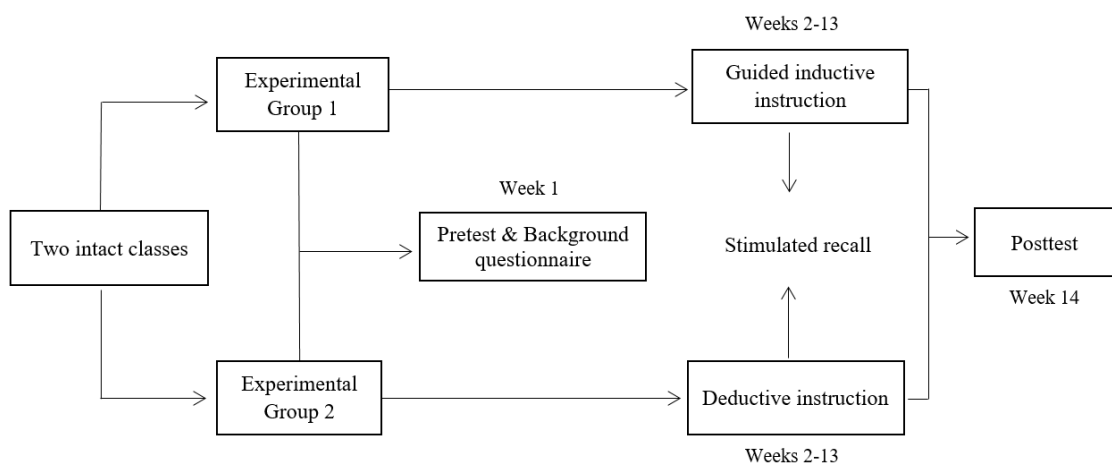


Figure 2 Experimental design and data collection procedures

3.3 Research instruments

3.3.1 Lesson plans

As the study aimed to compare the effects of the two different instructional approaches, two different sets of lesson plans which aimed to teach the same content were used. One set was designed following the concept of deductive grammar instruction and the other was guided inductive instruction. The instruction in both groups followed three steps of teaching: presentation, practice and production or 3Ps'. The difference between the two sets of the lesson plans was only at the presentation stage. In the deductive instruction, the target forms and the usage were firstly presented at the presentation stage; conversely, communicative texts containing target forms were presented in the guided inductive instruction. The four target structures, which were Past perfect, Passive voice, Reported speech, and Conditional sentences, were divided into three subgroups. Overall, there were twelve lesson plans created (See Appendix A).

Table 1: An overview of the lesson plans

	Experimental Group 1 (Guided Inductive Instruction)	Experimental Group 2 (Deductive Instruction)
Week	Contents/ Lessons	Contents/ Lessons
1	Introduction, Pretest	Introduction, Pretest
	Past Perfect	Past Perfect
2	- Review of past simple tense	- Review of past simple tense
3	- Form of past perfect	- Form of past perfect
4	- Usage of past perfect and past simple	- Usage of past perfect and past simple
	Passive Voice	Passive Voice
5	- Passive voice: simple present	- Passive voice: simple present
6	- Passive voice: simple past	- Passive voice: simple past
7	- Passive voice: simple present & simple past	- Passive voice: simple present & simple past
	Reported Speech	Reported Speech
8	- Statements	- Statements
9	- Questions	- Questions
10	- Commands and requests	- Commands and requests
	Conditional Sentences	Conditional Sentences
11	- Zero and first conditional sentence	- Zero and first conditional sentence
12	- Second conditional sentence	- Second conditional sentence
13	- Third conditional sentence	- Third conditional sentence
14	Posttest	Posttest

3.3.2 Pretest and posttest

The pre-test and the posttest consisting of 45 multiple-choice items was used to investigate the participants' knowledge of four target grammatical structures: Past perfect, Passive voice, Reported speech, and Conditional sentences (See Appendix B). These four structures were chosen due to the fact that they were not part of the English curriculum that the participants had encountered before. This is to ensure that the learning gains of the participants in both groups (if any) were not affected by the participants' previous knowledge of the target structures.

Prior to the research data collection, two pilot studies were conducted with different purposes. First, it was to test whether grade 9 students would have knowledge of the target structures. For this purpose, the test, of 50 items was piloted with 27 grade 9 (Mathayom 3) students from another school. The results showed that the participants got the wrong answer to most of the questions. This confirmed that the grade 9 participants did not have any knowledge of the four targeted structures. The second pilot study was carried out with a group of 55 students in grade 12 (Mathayom 6) in order to examine the reliability of the test and discrimination indexes of the test items. The Cronbach's alpha reliability was 0.718 and discrimination value varied between .41 and .78. The analysis also showed 5 items from totally 50 items were problematic and therefore they were removed. The Cronbach's alpha reliability of the 45 item test was 0.738, showing the test has acceptable reliability

3.3.3 Stimulated recall

Stimulated recall was used to obtain in-depth information on learning strategies activated by the participants while learning in two different approaches. There were 12 participants (six from each instructional group: three high and three low scorers, selected on the basis of their pre-test scores) invited to conduct a stimulated recall in Thai. The stimulated recall was recorded immediately after each lesson on a one-on-one basis for 5-10 minutes. The questions asked in stimulated recall were for examples:

How did you do the exercise in the worksheet?

What were the steps you used in doing the exercise?

Why did you underline this word?

During stimulated recall (See Figure 3), the participants' worksheets and notes (see Figure 4) were used as stimuli to stimulate and help the participants to recall their process while learning in the class.

Figure 3 Stimulated recall on a one-on-one basis



Figure 4 The worksheets and the participants' notes

Mon... Class: 11.3/2...

	Simple Present	Simple Past	Passive sentence.
1. She always washes his clothes on Saturday.	✓		His clothes are washed on Saturday.
2. He broke a cup yesterday.			
3. Bill cooked the potatoes.			
4. I took my mother to the museum.			
5. My father watches TV most evenings.			
6. She answered the question.			

Reported speech: Statement

Direct speech means using the exact words of the speaker.

Max said, "I like football." "I like football," said Max. "I like football," Max said.	The exact words of the speaker are within quotation marks. ผู้พูดเป็นคนพูดเอง สังเกตได้จากเครื่องหมายคำพูด
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Reported or indirect speech means using our own words to report what the speaker said.

Max said that he liked football.	The quotation marks are not used. นำคำพูดของคนอื่นมาพูดต่อ เครื่องหมายคำพูดจะนำเอาออก ใช้คำว่า that เข้าไปแทนที่ และมีการเปลี่ยนแปลง สรรพนาม, คำกริยา และคำบอกเวลา
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How to change direct speech to reported or indirect speech
วิธีการเปลี่ยน หรือนำคำพูดของคนอื่นมาพูดต่อ

1. A change of tense, after past reporting verbs, the verbs of the original speech are usually made more past, for example,

	Direct speech	Reported speech
Simple present	S + infinitive (V.1)	S + simple past (V.2) อดีต
Simple past	S + simple past (V.2)	S + had + past participle (V.3) อดีตยิ่งกว่า

If the reporting verb is in the Present or Future tense (e.g., say, will say) there is no change in the tense of the verb in the reported speech.

สรุป ข้อแตกต่าง

- ① เครื่องหมาย → that
- ② สรรพนาม
I = he / she
- ③ กริยา
V₁ → V₂
V₂ → had + V₃
- ④ คำบอกเวลา
last month → the month before
yesterday → the day before
today → that day

3.3.4 Background questionnaire

The questionnaire comprising 10 items was aimed to collect data on participants' personal information, language learning background and English language learning experience (See Appendix C).

3.4 Data Analysis

To investigate students' learning gains, pre-test and posttest scores of the participants in each group were compared by the application of Paired-Samples T-test. In addition, Independent t-test was run to compare the posttest scores in order to find out the significant differences in the learning performance of both groups. Then, content analysis was applied to analyze the learning strategies activated by the participants in both groups. The participants' verbal information was transcribed and coded according to the classifications of direct language learning strategies offered by Oxford's (1990). As mentioned earlier, the reason that only direct learning strategies were of the main concern was because the study focused only on what students did when they were learning and completing the tasks in the classroom.

The coding scheme consisted of 1) memory, 2) cognitive, and 3) compensation strategies. Memory strategies are mental tools comprising creating mental linkage, using sound and image, reviewing, etc. Cognitive strategies are directly operated on incoming information and used to enhance learning, for example, grouping, and organizing. Compensation strategies are strategies used to fulfill the students' knowledge gap, for example, guessing while reading or listening, and using synonyms.

4. Findings

Findings are presented according to the research questions as follows:

Research Question 1: Are there any significant differences in students' learning outcome when compared between the guided inductive group and the deductive instruction group and across four grammatical structures?

1.1 Students' learning outcome compared between guided inductive and deductive instruction

Table 2: Pretest and posttest scores of guided inductive (GI) and deductive instruction (DI) groups

Teaching Approach	Pre test		Posttest		Gain scores (Post- Pre Test)	Relative Gains Score (%)	Pair T-test	
	\bar{x}	S.D.	\bar{x}	S.D.			t	p
GI (n=26)	11.15	2.37	19.92	3.09	8.77	26.00	20.880	.000*
DI (n=24)	10.75	2.64	18.08	2.02	7.33	21.34	25.040	.000*

* $p < 0.01$

As can be seen in Table 2, when comparing the performance within the participants between the pretest and the posttest, the results show the difference in gain scores of both groups. Overall, the students in both groups performed better in the posttest, with a relative gain score of 26% for the GI group and 21.34% for the DI group. The analysis of the difference between pretest and posttest in each group shows significant value ($t= 20.880$, $p < .01$ in the GI group and $t=25.040$, $p < .01$ in the DI group). This shows that both instructional approaches helped the participants to develop their grammar knowledge.

Table 3: Comparing the posttest scores between the GI and DI groups

Teaching Approach	Posttest		Independent T-test			Effect size (Cohen's d)
	\bar{x}	S.D.	t	df	p	
GI (n=26)	19.92	3.09	2.465	48	.017*	0.70
DI (n=24)	18.08	2.02				

* $p < .05$

The analysis of Independent t-test was then carried out in order to investigate the significant differences in students' learning outcome compared between the guided inductive and deductive groups. This was to investigate if there was any significant difference in the posttest scores of the students in the guided inductive (GI) instruction group, compared to those in the deductive instruction (DI) group. As presented in Table

3, the average score of the participants in the GI group (\bar{x} = 19.92, SD = 3.09) is slightly higher than that of the participants in the DI group (\bar{x} = 18.08, SD = 2.02) and the difference between the mean scores of both groups is found significant at $p < .05$ ($t=2.456$, $p = .017$) with a moderate effect size (Cohen's $d = 0.70$). The results suggest that guided inductive instruction is more effective than deductive instruction in helping the students improve their grammatical knowledge.

1.2 Students' learning outcome comparing across four grammatical structures

Table 4: Pretest and posttest scores of the guided inductive (GI) group across the four target structures

Target Structures	GI Group						Relative Gains Score (%)
	Pretest		Posttest		T-test		
	\bar{x}	S.D.	\bar{x}	S.D.	t	p	
Past perfect	3.08	0.76	6.84	1.50	11.774	.000*	54.34
Passive voice	3.77	0.99	6.27	1.69	8.969	.000*	40.13
Reported speech	1.03	0.91	1.36	0.48	1.994	.057	3.68
Conditional sentences	2.87	1.15	5.43	1.67	14.245	.000*	35.90

* $p < 0.01$

Table 5: Pretest and posttest scores of the deductive instruction (DI) group across the four target structures

Target Structures	DI Group						Relative Gains Score (%)
	Pretest		Posttest		T-test		
	\bar{x}	S.D.	\bar{x}	S.D.	t	p	
Past perfect	3.16	1.45	5.58	1.12	10.063	.000*	35.38
Passive voice	3.14	1.33	5.50	0.98	10.552	.000*	34.40
Reported speech	1.08	1.01	1.45	0.53	2.062	.051	4.15
Conditional sentences	3.05	1.61	5.11	1.23	9.534	.000*	29.64

* $p < 0.01$

Tables 4 and 5 present the comparison of the pretest and posttest scores across the four target structures in each instructional approach—guided inductive and deductive instruction respectively. The analysis of the difference between pretest and posttest scores within the groups shows significant values for three structures: Past perfect, Passive voice, and Conditional sentences.

For Reported speech, the analysis, however, did not show a significant value ($t=1.994$, $p=.057$ in GI group and $t=2.062$, $p=.051$ in DI group). This indicates the participants did not improve their knowledge about Reported speech, no matter what teaching approach (guided inductive or deductive instruction) was used.

Table 6: Comparison of posttest scores of guided inductive (GI) and deductive instruction (DI) groups across the four target structures

Target Structures	GI Group		DI Group		T-test independent		Effect size (Cohen's <i>d</i>)
	\bar{x}	S.D.	\bar{x}	S.D.	t	p	
Past perfect	6.84	1.50	5.58	1.12	2.719	.009*	0.95
Passive voice	6.27	1.69	5.50	0.98	1.951	.057	0.56
Reported speech	1.36	0.48	1.45	0.53	0.394	.695	0.18
Conditional sentences	5.43	1.67	5.11	1.23	1.103	.276	0.22

* $p<0.01$

The independent t-test was calculated to investigate if there is any significant difference in the posttest scores when compare across four grammatical structures. As can be seen from Table 6, the average posttest scores of GI group (6.84, 6.27, 1.36, and 5.43) is higher than DI group (5.58, 5.50, 1.45, and 5.11) in all the structures. Above all, a significant difference was found only for Past perfect ($t=2.719$, $p=.009$) with a large effect size (Cohen's $d = 0.95$). Based on this finding, it could be concluded that guided inductive instruction is more effective and suitable in helping the participants to improve their knowledge about Past perfect than deductive instruction.

To sum up, both teaching approaches, to a large extent, helped the participants to improve their grammatical knowledge in three of the four structures investigated, which are Past perfect, Passive voice, and Conditional sentences. However, the levels of learning achievement appear to vary according to the teaching approaches applied and the structures targeted. The students achieved better results for Past perfect when being taught in the guided inductive manner. For the other two structures (Passive voice and Conditional sentences), no significant different in learning gains was obtained when compared between the two instructional approaches.

Research Question 2: What learning strategies do the students activate when they learn in each instructional approach?

To investigate the strategies students used in learning the target structures, stimulated recall data were transcribed and analyzed. The results show that overall, three types of learning strategies, memory, cognitive, and compensation strategies, were activated by the participants in both groups. Following is the detailed description of what the participants employed in each strategy type.

Memory strategies were found to be used by the participants in both groups. In this study, the important information that the participants thought they should remember includes, for example, the form of tenses and how the target form is used. What the participants did in order to memorize the information are 1) underlining or circling the target structure and repeating it several times to remember it, 2) thinking about the association between the grammar structures they already knew and the new grammatical structures in order to remember it easily, and 3) remembering the words or phrases by remembering their location on the board. The examples of students' verbalization coded under memory strategies are:

*I underlined this words; verb form of past participle, in order to remember it.
(Chutipha*, conducted on 12th December 2017¹)*

*I knew this sentence is about the past event because I remember that the verb form of the past event ending with –ed.
(Sunisa*, conducted on the 20th December 2017¹)*

* Pseudonym

¹ As stimulated recalls were conducted in the participants' first language (Thai), the excerpts provided in the result session were translated by the researcher into English.

Cognitive strategies were used to understand the main point of the lessons. In this study, four cognitive strategies were found being used by the participants: 1) classifying a new grammar rule under a group of similar categories (e.g. tenses, verbs, subjects, 2) taking notes, underlining or using different colors to highlight the important parts of the rules, 3) summarizing the main parts of the rules within a text in their first language (Thai), and 4) relying on all the clues from the text to discover the grammar rules. This can be seen in the following excerpts:

I read the text in a worksheet, and then summarized the target forms and used them as guidelines to do the exercise.

(Chananon, conducted on 20th December 2017¹)*

I've highlighted the important verb form in red, the time expression in pink, and the subject pronoun in green.

(Wanna, conducted on the 9th January 2018¹)*

Compensation strategies were applied to compensate for gaps in knowledge and to understand the lessons better. The analysis shows that the participants basically relied on their friends and teacher to solve the problems in their learning and to fulfill gaps in their knowledge. The strategies that they reported using are 1) asking the teacher to help explain the meaning of the unknown words or unclear concepts, 2) asking friends to explain what the teacher explained or what the teacher asked to do, 3) looking back at previous lessons in order to get more information about the current one, and 4) guessing the meaning of words while reading the text. The examples of students' verbalization are:

I discussed with my friends about how to distinguish between command and request sentences.

(Ekawat^{1}, conducted on the 23rd January 2018¹)*

* Pseudonym

¹ As stimulated recalls were conducted in the participants' first language (Thai), the excerpts provided in the result session were translated by the researcher into English.

I didn't know the meaning of this word so I asked the teacher.

(Somchai, conducted on the 19th December 2017¹)*

Figure 5: Overall learning strategies activated by the participants compared between the guided inductive and deductive groups

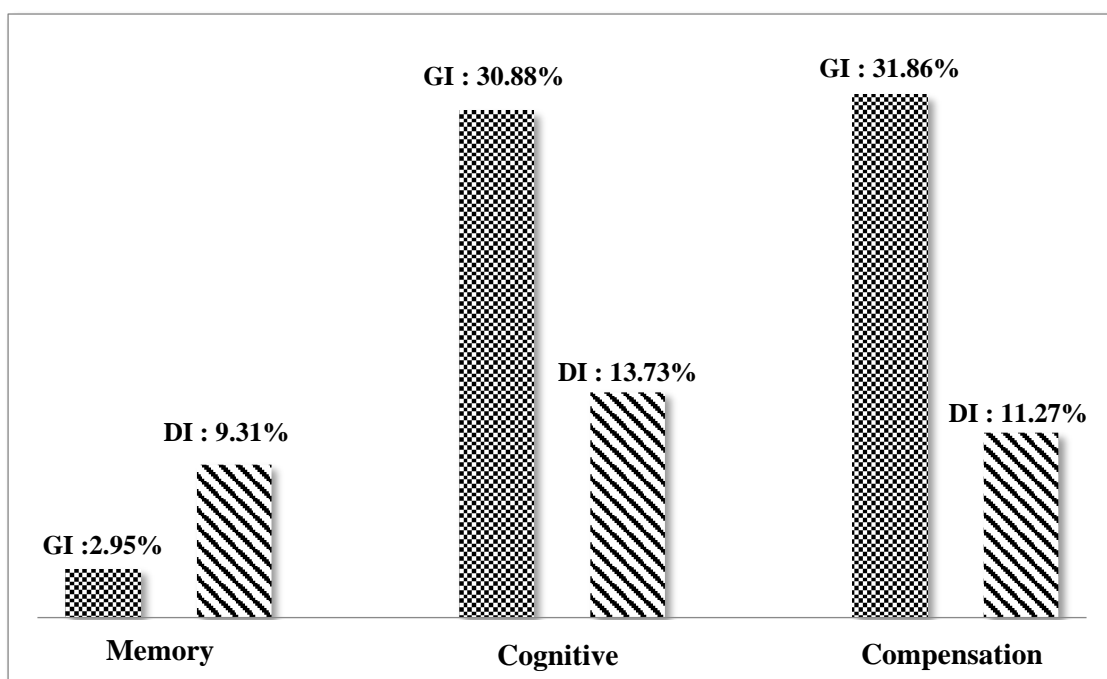


Figure 5 compares overall use of the learning strategies by the participants in the guided inductive and deductive groups. Although the participants in both groups used similar types of learning strategies, the analysis revealed that there was a difference in terms of the frequency of the strategies used. Overall, the strategy reported being used by the GI group accounted for 65.69% whereas the strategy used by the DI group showed 34.31%. The most frequently activated learning strategies by the GI group were compensation (31.86%) and cognitive strategies (30.88%). These numbers were about three times as much as those activated by the DI group. The least frequently used strategies in both groups were memory strategies. However, the frequency of the

* Pseudonym

¹ As stimulated recalls were conducted in the participants' first language (Thai), the excerpts provided in the result session were translated by the researcher into English.

memory strategies used by the DI group (9.31%) was higher than those used by the GI group (2.95%).

Research Question 3: Are the learning strategies different when compared between the two instructional approaches and across the four grammatical structures?

When compared across the four target structures – Past perfect, Passive voice, Reported speech, and Conditional sentences, the results show that there is a variation in the strategies used (see Figure 6).

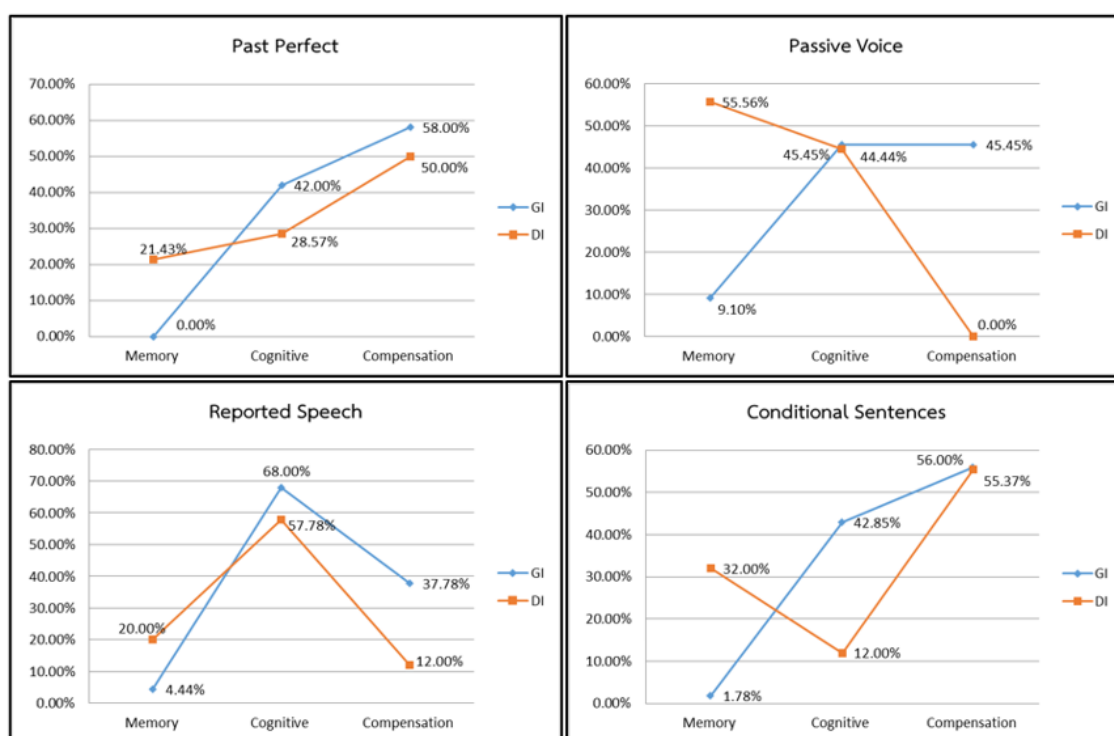


Figure 6: Learning strategy use compared across the four target structures

The analysis showed very different patterns of strategy used when different structures were instructed. For Past Perfect and Conditional sentences, the participants reported using compensation strategies the most frequently of all the strategies used (50 - 58% for Past Perfect and 55.37%-56% for Conditional sentences). This showed that gaps in the participants' knowledge occurred most of the time in learning these two structures and to try to solve the problems, the participants compensated the gaps in their knowledge by getting help from their friends and teacher and going back to their

previous lessons to get some clues. For Reported Speech, the results showed that the participants used cognitive strategies the most frequently (57.78%-68%), showing that while learning the participants spent most of the time understanding the content rather than trying to remember it or compensating gaps in their knowledge. Although, overall memory strategies were used the least frequently compared to their counterparts, they were used the most frequently by the DI group in Passive Voice (55.56%) and there appeared no evidence of compensation strategies used in this topic by the DI group. This indicates the participants in the DI group spent most of the time in learning Passive voice to remember what the teacher presented to them.

5. Discussion

1. Learning achievement

The findings related to the first research question suggest that overall guided inductive instruction was more effective than deductive instruction for teaching grammatical structures to Mattayom 3 students in Hatyai, Thailand. The findings support some previous studies (e.g., Herron & Tomasello, 1992; Haight et al., 2007; Vogel et al., 2011; Cerezo, 2016) which demonstrated that guided inductive instruction provided better results in grammar instruction than the deductive one.

A possible reason to explain why the students benefited more from the guided inductive instruction could be that the participants in the guided inductive group had exposure to a number of examples of target structures in communicative texts, and that they were encouraged and required to think about the target forms and develop a hypothesis about the rules with guidance from the teacher. In this process of learning, the students were believed to have actively engaged in their own learning. This is as shown in the number of learning strategies they reported using during the learning process of the four target grammatical structures. These findings are consistent with cognitive theories which view learning as an active process requiring the students' engagement. Herron and Tomasello (1992) proposed that students learn best when they form a hypothesis and get immediate feedback and guidance from the teachers.

The findings also suggest that both instructional approaches helped the students to develop their grammatical knowledge of Past perfect, Passive voice, and Conditional sentences. Only knowledge of one structure, Reported speech, was not found to be significantly different in the pre- and post-test scores, irrespective of what teaching approach (guided inductive or deductive instruction) was used. Although the cognitive strategies were reported to be used the most frequency in both groups, the results showed the least achievement scores in both groups, compared to the other structures. This might be because of the complexity of Reported speech itself, since students had to follow many steps to transform direct sentences to reported sentences. For example, they had to make changes in pronoun use, tense sequencing, time expressions, word order, etc. The information from the stimulated recalls revealed that some students were confused about how to change the sentences, especially Reported questions. Some of them precisely recognized all the steps of the transformation but were uncertain about tense sequencing, change of pronoun and word order (due to lack of prior knowledge).

Considering the development scores of Reported speech in both groups, the relative gain score of DI group is slightly higher than GI group (4.15% in DI group and 3.68% in GI group). The deductive instruction, in other words, might be more suitable to teach the difficult and complex structure than guided inductive instruction. As Hammerly (1982) recommended that the explanation about grammar should be short and direct to the point, since if it is extensive, too complex, and covers many technical terms, students will find it difficult to learn and understand it. Also, Van and Borst (2012) have proposed that providing the students with an obvious explanation before the tasks will enable them to process the target structures accurately.

When comparing the learning achievement across four grammatical structures, it appeared that the students achieved better results for Past perfect when being taught in the guided inductive instruction. This confirms what Fischer's (1979) and Robinson's (1997) suggestion that the target structures which are similar to the learners' L1 are more suitable for teaching by applying inductive or guided inductive approach.

One reason to explain the greater success in learning Past perfect than the other structures in this study could be the fact that to understand the use of Past perfect,

students have to rely on the context, therefore, the students have to understand the meaning and the sequence of the situation in the context before applying the correct form of Past perfect sentence as reflected in learning strategies used in Past perfect structure. That is, the students activated the most compensation strategies to compensate gaps in their knowledge and to help them understand the context of Past perfect better.

2. Learning strategies

The results demonstrated that the participants in both groups relied on different strategies in the process of learning the four target structures. The guided inductive group appeared to use less memory strategies but more compensation and cognitive strategies. These two types of strategies used to understand the content are delivered and to discover rules by presented. This made them active students in their own learning process and made them more successful in learning. This finding is in line with the constructivist concept which indicates that knowledge construction occurs when the students are actively involved to discover or construct their own knowledge in the process of learning (Fang, 2009; Abuseileek, 2009).

The DI group activated different types of learning strategies depending on the target structures. Compensation strategies were the most frequency used in Past perfect and Conditional sentences. This might be because of the content in these two structures require students to understand the context rather than remember how the rules are used in a context. Whereas, memory strategies reported to be used the most frequency in learning Passive voice. It can be implied that the content in Passive voice make students believe that they have to listen to their teacher, memorize the grammatical forms and its rules that the teacher presented to them rather trying to understand how the rule works in a context. This supports the transmission of knowledge model in which language or knowledge is transferred from teachers to students. The role of the students are to understand and memorize instead of manipulate or construct their own knowledge (Fleming, 2018).

6. Conclusion and pedagogical implications

This study attempted to discover how students benefit from two instructional approaches— guided inductive and deductive instruction by investigating the learning outcome and learning strategies across four target structures. The results suggest that overall the students learning in the guided inductive instruction group achieved better results than those in the deductive instruction. However, when compared across the four structures targeted, it has been found that the students have significantly improved their grammatical knowledge of three of the four targeted structures, with different degrees of success. For a complex structure –Reported speech no matter what instructional approach (guided inductive instruction or deductive instruction) was used, there was no significant improvement. On the other hand, for a less complex structure and a structure that students have to use the context to understand how it works, such as Past perfect, Passive voice and Conditional sentences, it appears that guided inductive instruction is more useful.

Based on these findings, it is recommended that teachers assess their own teaching content and choose the teaching approach that would suit specific teaching purposes. More importantly, the characteristics of the target structure and students' linguistic background should be taken into account. For instance, deductive instruction appears to be a more suitable choice than guided inductive instruction to teach more difficult and complex structures, especially the structures that involves thinking in several steps. In other words, the complexity of Reported speech needs the teachers to help the students by providing precise explanation or deductively teaching the grammar rules.

The analysis of learning strategies activated by the participants in both the guided inductive and deductive groups indicated that the students in the guided inductive group activated more cognitive and compensation strategies than did the deductive group, and this made students more active in their own learning process, which is important for them to be successful in learning in the future. The investigation of the learning strategies across target structures also showed very different patterns of strategy used when different structures were instructed. Since, different teaching

approaches appeared to trigger different learning strategies, leading to different degrees of learning achievement, the selection of teaching approaches should be done with care. The guided inductive instruction is beneficial in teaching the structures that are simple and relevant to students' first language. The deductive teaching is useful when complex structures (involved several steps of thinking) are targeted.

7. Recommendations for further research

The findings of the current study could be used as guidelines for teachers in choosing suitable teaching approaches to enhance students' learning of grammar as well as helping students to learn the target language effectively. However, the generalization of the findings should be done with care, as due to a time constraint, the study focused only on one group of low proficiency students (Mathayom 3 students) and only certain grammar structures were targeted. For further studies, it would be interesting to further investigate the effectiveness of the grammar instruction which focuses on different structures and students with different levels of proficiency as well as other factors that may either facilitate or obstruct grammar development.

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APPENDICES

Appendix A: Sample Lesson Plans

Unit 1/ Guided inductive instruction

Past Perfect: One action had happened before the other

Duration: 50 minutes

Goals:

Students will be able to identify and form sentences to describe the situation that two actions happened in the past.

Objectives: At the end of this lesson students will be able to:

1. use both past perfect simple and simple past accurately
2. differentiate past perfect simple from simple past in terms of both meaning and structure.

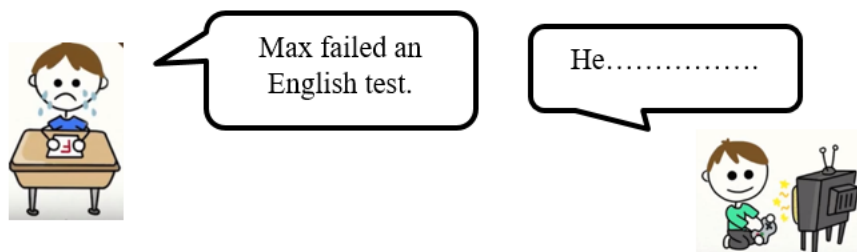
Materials: Computer (power point presentation), white board and worksheet

Teaching procedure:

Warm up (5 minutes)

1. Ask the students to look at the picture of Max, my nephew.

What had happened with him? Let the students guess and talk to their friend.



Why do you think he failed the test?


Presentation (25 minutes)

1. In pairs: the students read the news about the diamond jewelry robbery.

DIAMOND JEWELRY ROBBER

In September 2016, thieves stole diamond jewelry from Nice Diamond, a famous jewelry shop in Bangkok. The thieves were very smart. Before the robbery, they had hidden in the building next door and had cut a hole through the wall.

They used it to get into the shop. By the time the guard at the entrance saw them, they had already taken the very expensive jewelry from the safe. A man from the neighborhood had heard some noises in the shop and he called the police but when they arrived to the shop, the thieves had escaped.



Then ask them the following questions:

- When did the thieves steal diamonds jewelry from Nice Diamond?
 Did the thieves hide in the building next door before they stole diamond jewelry?
 What had happened when the guard at the entrance saw them?
 What did the neighborhood do after he had heard some noises?
 What happened when the police arrived to the shop?
 Did the police arrive before the thieves escaped?

Call on the volunteers to share their own answers and ask them to write on the board. Focus their attention to the key questions and underline the time expression, verb tense used in each sentence. For example:

Q: What had happened when the guard at the entrance saw them?

A: When the guard at the entrance saw the thieves, they had already taken the very expensive jewelry from the safe.

Q: What did the neighborhood do after he had heard some noises?

A: After he had heard some noises, he called the police.

Teacher has students to read the sentences aloud, and ask; what action happens first? Elicit the answer with the whole class.

2. Have students read the news again and let them list the sentences containing the past perfect simple and simple past in order to explore what event happened first and what happened later. Then teacher writes two columns on the board

Action happened first	Later action

Have the students decide which action is happen first and later in each sentence. Then call on different students to write their sentences under the correct column head. Check the answers together.

Practice (10 minutes)

1. Have students look at the picture and answer the question; what had happened with Tom? Did Tom miss the train? In pairs, let students think and share their answers with the class.

When *we arrived* to the train station, *the train had left*.

Write 1 by the action which happened first and 2 by the action which happened after.

He arrived to the train station. or The train left.

2. Tell students to do the worksheet; put the verb into the correct form between past perfect simple and simple past.
3. Whole class activity, teacher writes the sentence on the board.
“Before the police arrived to the shop, the thieves had escaped.”
Ask the students to say what happened first and second?
Let them to analyze all Sentences in worksheet discuss with their friends.
Teacher elicits the whole class to write the form of past perfect simple and simple past on the board.

Production (10 minutes)

1. Have students work with a partner. Ask them to list the activities that happened and then combine them. Take turn telling each other what they did and what they had done yesterday. Use past perfect simple and simple past. Ask them to write it on their notebook and report the answers to the class, for example,

Partner A: get up, take a bath, have breakfast, go to school, come back home, do homework, watch TV, etc.
Before I had breakfast, I had taken a bath. After I had come home, I did my homework,..

Anticipated problems and possible solutions: In case the students aren't familiar with some past participle verbs, the list of common regular and irregular verbs will be prepared for them.

Worksheet: One action had happened before the other

Put the verb into the correct form, past perfect simple or simple past

Worksheet: One action had happened before the other

Put the verb into the correct form, past perfect simple or simple past

1. After Tony (*spend*) his holiday in France he (*want*) to learn French.
2. Jack (*phone*) his mom at work before he (*leave*) for his trip.
3. My mother (*turn on*) the radio after she (*wash*) the dishes.
4. When John (*arrive*) the match already (*start*).
5. After my son (*come*) home he (*feed*) the dog.
6. Before Justin (*sing*) a song he (*play*) the guitar.
7. She (*watch*) a television after her children (*go*) to bed.
8. After George (*make*) breakfast he (*phone*) his girlfriend.
9. My sister (*be*) very tired because she (*study*) too much.
10. The children (*ride*) their bikes before they (*meet*) their friends.

Unit 1/ Deductive Instruction

Past Perfect: One action had happened before the other

Duration: 50 minutes

Goals:

Students will be able to identify and form sentences to describe the situation that two actions happened in the past.

Objectives: At the end of this lesson students will be able to:

1. use both past perfect simple and simple past accurately
2. differentiate past perfect simple from simple past in terms of both meaning and structure.

Materials: Computer (power point presentation), white board and worksheet

Teaching procedure:

Warm up (5 minutes)

1. Ask the students to look at the picture of Max, my nephew.
What had happened with him?



Max failed an English test.

He.....



Why do you think he failed the test?

Let the students guess and talk to their friend why Max failed and then write the answer of their own.

Presentation (15 minutes)

1. Teacher tells the topic of the lesson, the usage of past perfect and past simple tenses. Present these two structures.

	Simple past	Past perfect simple
Affirmative	S + past verb (V.2)	S + had + past participle (V.3)
Negative	S + did not + verb infinitive	S + had + not + past participle (V.3)
Interrogative	Did + S + verb infinitive?	Had + S + past participle (V.3)?

2. Direct students' attention to the meaning and how to use both structures.
The past perfect simple is used to talk about two different actions in the past. One action was completed before the other action.
Use the past perfect simple to express the first action. Use simple past to express the second action.

3. Time Expressions in the Past Perfect Simple

When we talk about two actions that happened and completed in the past, we use past perfect and past simple tenses. Different time expressions are used to connect two actions/ events, such as

After

Use 'after' with the past perfect simple to emphasize that one action had happened before the other.

After + past perfect, past simple, for example,
After she had moved out, I found her notes.

Before, by the time, when

Use 'before', 'by the time', 'when' with the simple past to indicate that the action happened after the other action, for example,

Before I knew it, she had run out the door.
By the time he phoned her, she had found someone new.

4. Write the following statement on the board and have students read and discuss what event happened first and what happened later.

Emma had gone home by the time that Michael arrived at the party.

Two actions were completed in the past.

1. Emma went home at 10.00.
2. Michael arrived at the party 10.15.

One action was completed before the other action.

First action = Emma went home.

Second action = Michael arrived at the party.

Use past perfect simple to express the first action

Emma *had gone* home.

Use simple past to express the second action

Michael *arrived* at the party.

Practice (20 minutes)

1. In pairs: the students read the news about the diamond jewelry robbery and underline the verbs in the past perfect and simple past tenses.

DIAMOND JEWELRY ROBBERY

In September 2016, thieves stole diamonds jewelry from Nice Diamond, a famous jewelry shop in Bangkok. The thieves were very smart. Before the robbery, they had hidden in the building next door and had cut a hole through the wall.

They used it to get into the shop. By the time the guard at the entrance saw them, they had already taken the very expensive jewelry from the safe.

A man from the neighborhood had heard some noises in the shop and he called the police but when they arrived to the shop, the thieves had escaped.



2. Then ask them the following questions:

When did the thieves steal diamonds jewelry from Nice Diamond?

What had the thieves done before they got into the shop?

What had happened when the guard at the entrance saw them?

What did the neighborhood do after he had heard some noises?

What happened when the police arrived to the shop?

Teacher randomly asks a few students to answer each question and write the answers on the board.

3. Tell students to do the worksheet; put the verb into the correct form of either past perfect simple or simple past.
4. Teacher elicits the answers and summarizes the entire lesson and asks if students have any problems.

Production (10 minutes)

1. Have students work with a partner. Ask them to list the activities that happened and then combine them. Take turn telling each other what they did and what they had done yesterday. Use past perfect simple and simple past. Ask them to write it on their notebook and report the answers to the class, for example,

Partner A: get up, take a bath, have breakfast, go to school, come back home, do homework, watch TV, etc.

Before I had breakfast, I had taken a bath. After I had come home,

I did my homework,..

Anticipated problems and possible solutions: In case the students aren't familiar with some past participle verbs, the list of common regular and irregular verbs will be prepared for them.

Worksheet: One action had happened before the other

Put the verb into the correct form, past perfect simple or simple past

Worksheet: One action had happened before the other

Put the verb into the correct form, past perfect simple or simple past

1. After Tony (*spend*) his holiday in France he (*want*) to learn French.
2. Jack (*phone*) his mom at work before he (*leave*) for his trip.
3. My mother (*turn on*) the radio after she (*wash*) the dishes.
4. When John (*arrive*) the match already (*start*).
5. After my son (*come*) home he (*feed*) the dog.
6. Before Justin (*sing*) a song he (*play*) the guitar.
7. She (*watch*) a television after her children (*go*) to bed.
8. After George (*make*) breakfast he (*phone*) his girlfriend.
9. My sister (*be*) very tired because she (*study*) too much.
10. The children (*ride*) their bikes before they (*meet*) their friends.

Appendix B: Grammar Test (Pre and Posttest)

<u>Grammar Test</u>

Directions: Choose the best answer for each question.

1. Linda.....the school before her mother came to pick her.
 - a. leaves
 - b. had left
 - c. has left
 - d. is leaving

2. They.....at work in the early morning and found that someone had broken into the office.
 - a. arrive
 - b. arrived
 - c. had arrived
 - d. have arrived

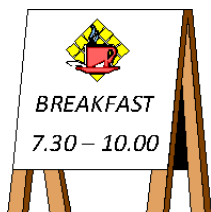
3. After they.....a bath, they had their breakfast.
 - a. take
 - b. had taken
 - c. have taken
 - d. were taking

4. I didn't know who she was. I.....never.....her before.
 - a. was, seeing
 - b. have, seen
 - c. didn't, see
 - d. had, seen

5. He played football yesterday. He wasn't very good at it because it was his first game. He.....it before.
 - a. had never played
 - b. has never played
 - c. never played
 - d. didn't play

6. English.....in schools of almost every country.
 - a. teaches
 - b. taught
 - c. is taught
 - d. has been taught

7. Nowadays, a lot of computers..... in Korea.
 a. make
 b. are made
 c. were made
 d. have been made
8. How many newspapers..... in Thailand every day?
 a. printed
 b. have printed
 c. were printed
 d. are printed
9. Breakfast.....at this hotel from 7.30 to 10.00



- a. has been served
 b. has served
 c. is served
 d. serves

10. John: Can I use your mobile phone?
 Nick: I'm afraid you can't because we.....to bring it into the class.
 a. haven't been allowed
 b. haven't allowed
 c. aren't allowed
 d. didn't allow

11. Mona Lisa.....by Leonardo da Vinci in 1503.



- a. painted
 b. has painted
 c. was painted
 d. had painted

12. Mary.....some flowers by her boyfriend on her last birthday.
 a. gave
 b. was given
 c. has given
 d. has been given

13. A: What happened to your brothers?
B: They.....by a dog.
a. bit
b. had bitten
c. were bitten
d. have been bitten
14. All flights.....by the United Airline yesterday because of fog.
a. canceled
b. had cancelled
c. were cancelled
d. have been cancelled
15. My phone yesterday night in the disco.
a. stole
b. has stolen
c. was stolen
d. has been stolen
16. "It is too late."
He said that.....
a. it was too late.
b. it has too late.
c. it has been too late.
d. it was being too late.
17. "I go shopping every day."
She said that.....
a. she goes shopping every day.
b. she went shopping every day.
c. I have gone shopping every day.
d. she is going shopping every day.
18. "I eat sweets and biscuits."
Tom said that.....
a. I ate sweets and biscuits.
b. he ate sweets and biscuits.
c. I have eaten sweets and biscuits.
d. he has eaten sweets and biscuits.
19. This morning Max said, "I did my homework yesterday."
He said.....
a. he did his homework yesterday.
b. I did my homework the day before.
c. I have done my homework yesterday.
d. he had done his homework the day before.

20. "I booked the plane tickets to Bangkok this morning", said John.
John said he.....
- booked the plane tickets to Bangkok this morning.
 - booked the plane tickets to Bangkok that morning.
 - had booked the plane tickets to Bangkok this morning.
 - had booked the plane tickets to Bangkok that morning.
21. "Where is my umbrella?" my mother asked.
She asked me.....
- where my umbrella was.
 - where her umbrella was.
 - where was her umbrella.
 - where is my umbrella.
22. "Do you watch television every evening, Michael?"
The teacher asked Michael..... television every evening.
- if he watched
 - did he watch
 - does he watch
 - has he watched
23. "What time did you get home last night?"
My parents asked me
- what time did I get home last night.
 - what time have I got home last night.
 - what time I got home the night before.
 - what time I had got home the night before.
24. John: Jane, how often do you go to the cinema?
Jane: Twice a month.
John asked Jane..... to the cinema.
- how often did she go
 - how often she went
 - how often does she go
 - how often she goes
25. Michael: "Do you live in London?"
Graham: Of course.
Michael asked Graham..... in London.
- does he live
 - did he live
 - if he lived
 - he lived

26.

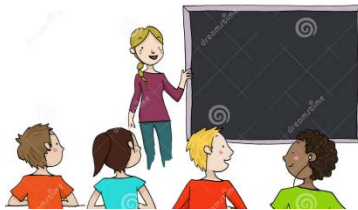


Jane, Don't close your mouth, please.

The dentist asked Jane.....

- a. don't close your mouth
- b. doesn't close her mouth.
- c. didn't close your mouth
- d. not to close her mouth.

27.



Look at the blackboard, children!

The teacher told the children the blackboard.

- a. to look at
- b. looking at
- c. looked at
- d. look at

28.



Darling, please give me something to eat.

Tom.....him something to eat.

- a. asked his darling to give
- b. told his darling to give
- c. asked his darling give
- d. told his darling give

29. Sarah: I am going downtown this afternoon.
Do you need anything from the supermarket?
Rita: Please buy some milk.
Rita asked Sarah.....some milk.
- a. has bought
 - b. bought
 - c. to buy.
 - d. buys

30. Jason: We'll have a meeting tomorrow morning. Don't be late.
Mr. Jason told everyone in his office.....for a meeting.
- hasn't been late
 - doesn't be late
 - not to be late
 - didn't be late
31. If people.....too much, they get fat.
- have eaten
 - are eating
 - ate
 - eat
32. Put those flowers in the sun.
If they don't get enough light, they.....
- die
 - have died
 - would die
 - are getting to die
33. The fish will die if you.....them.
- do not feed
 - did not feed
 - had not fed
 - have not fed
34. If Tom passes the test, he.....very happy.
- is
 - will be
 - would be
 - would have been
35. If heto my house, I will show him my new CDs player.
- comes
 - came
 - will come
 - would come
36. If I.....you, I would go to London.
- am
 - was
 - were
 - had been

37. If John went to the moon, he.....a big house there.
- builds
 - will build
 - would build
 - would have built
38. She would buy a new sport car if she.....a lot of money.
- has
 - had
 - has had
 - had had
39. If I.....a superstar, I wouldn't go to school.
- become
 - became
 - had become
 - have become
40. If Michael.....Emma's number, he.....phone her.
- knows, won't
 - knew, would
 - has known, will
 - will know, would
41. I would not have entered the room if Laura.....the door.
- locked
 - is locking
 - had locked
 - has locked
42. If John had told me, I.....you.
- will help
 - would help
 - will be helped
 - would have helped
43. They.....to the concert if it had rained.
- will not go
 - have not gone
 - will not have gone
 - would not have gone

44. Rita: Why didn't you call me last night?
Mike: I would have called if I.....my phone.
a. do not forget
b. did not forget
c. had not forgotten
d. have not forgotten
45. Max: You are late again, Mike.
Mike: I'm sorry. I went to bed late last night.
Max: If you had gone to bed early, you..... late.
a. did not wake up
b. will not wake up
c. would not wake up
d. would not have woken up
-

Appendix C: Background Questionnaire

แบบสอบถามข้อมูลทั่วไป
เกี่ยวกับการเรียนภาษาอังกฤษ ของนักเรียนชั้นมัธยมศึกษาที่ 3
โรงเรียนเทศบาล 4 (วัดคลองเรียน)

คำชี้แจง โปรดทำเครื่องหมาย ลงในช่อง หน้าข้อความที่ตรงกับความเป็นจริง หรือเติมข้อความลงในช่องว่างที่กำหนด

ส่วนที่ 1 ข้อมูลพื้นฐาน เกี่ยวกับผู้ตอบแบบสอบถาม

1. ชื่อ นามสกุล.....
2. เพศ
 ชาย หญิง อายุ.....ปี

ส่วนที่ 2 ข้อมูลเกี่ยวกับการเรียนภาษาอังกฤษ

1. นักเรียนชอบเรียนวิชาภาษาอังกฤษหรือไม่
 ชอบ ไม่ชอบ
2. นักเรียนคิดว่าส่วนไหนของวิชาภาษาอังกฤษที่ยากที่สุด (เลือกตอบเพียง 1 ข้อ)
 คำศัพท์ การอ่าน การฟัง การพูด ไวยากรณ์
3. นักเรียนชอบเรียนส่วนไหนของภาษาอังกฤษมากที่สุด (เลือกตอบเพียง 1 ข้อ)
 คำศัพท์ การอ่าน การฟัง การพูด ไวยากรณ์
4. นักเรียนมีคาบเรียนภาษาอังกฤษกี่คาบต่อสัปดาห์
 2 3 4 มากกว่า 4
5. ระดับคะแนน (เกรด) วิชาภาษาอังกฤษ 5 ของนักเรียนคือ
 0 1
 1.5 2
 2.5 3
 3.5 4
6. นักเรียนมีโอกาสเรียน, ฝึกฝนหรือทบทวนภาษาอังกฤษนอกชั้นเรียนหรือไม่ ถ้ามี นักเรียนทำอย่างไร
 ไม่มี
 มี เรียน, ฝึกฝนและทบทวนที่บ้าน
 เรียนคอร์สพิเศษหลังเลิกเรียนและวันหยุดกับโรงเรียนกวดวิชา
 อื่นๆ (ระบุ)
7. นักเรียนทำอย่างไรเมื่อมีปัญหาเกี่ยวกับการเรียนหรือการทำบ้านภาษาอังกฤษ

Appendix D: Paper 1

Guided Induction versus Deductive Instruction: Their Effect on EFL Students' Grammar Learning

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Abstract

One major concern over grammar instruction in an EFL context is whether grammar should be taught deductively or inductively. To shed more light in this issue, this experimental study investigates the effect of two grammar instructional approaches (guided induction and deductive instruction) on students' learning gains and students' learning strategies. Four grammatical structures targeted are past perfect, passive voice, reported speech, and conditional sentences. A total of 50 Mathayom 3 students participated in this study: 26 in the guided-induction group and 24 in the deductive instruction. To explore the participants' learning gains, a post-test was used and to investigate the participants' learning strategies, 12 participants (six from each instructional approach) were invited to conduct a stimulated recall after each lesson. The analysis of post-test scores presents that the guided induction group outperformed the participants in the deductive instruction and the difference was found to be significant ($t=2.465$, $p < .05$). The qualitative analysis of stimulated recall data, in addition, presents that the participants in each group engaged in different strategies while learning. Memory strategies appeared to be used by a higher number of the participants in the deductive group. Cognitive and compensation strategies, however, were used by a greater number of the participants in the guided induction group. The links between the use of learning strategies and success in grammar learning will be discussed.

Keywords: grammar instruction; guided induction; deductive instruction; grammar learning; learning strategies

Introduction

Grammatical knowledge has been considered important in language learning and communication. It is one basic type of knowledge that language learners should acquire in order to increase their proficiency and accuracy in language use (Ellis, 1996) and is the basis of effective communication in different forms i.e., listening, speaking, reading and writing (Corder, 1967). With grammatical knowledge, learners are likely to be able to form meaningful and communicative statements and expressions, all of which will help them to communicate more successfully in communicative settings (Doff, 2000; Thornbury, 1999).

Grammar instruction has been emphasized in different language teaching settings (see Haight, Herron, & Cole, 2007; Adair-Hauck, Donato, & Cumo-Johanssen, 2010; Vogel, Herron, & Cole, 2011; Tammenga-Helmantel & Bazhut, 2015; Arifin, 2016). However, concerns have been expressed over grammar instruction. One of them is how grammar should be taught in the language classroom and whether it should be taught implicitly or explicitly (Hammerly, 1975; Ellis, 2006).

According to Brown (2007), two different approaches have been suggested for grammar instruction: implicit and explicit teaching. Within implicit grammar teaching, the teacher provides students with several examples of target forms in a communicative context. Students in this teaching approach are believed to acquire the target form from the examples given, instead of listening to an explicit instruction from the teacher and memorizing it. On the other hand, explicit grammar teaching involves presenting target forms directly and explicitly to the students. The teacher sets a learning objective, directs students' attention to the target forms, and teaches the target forms in a logical order through his or her demonstration, explanation, and practice.

A number of studies have investigated the effect of explicit and implicit grammar instruction on students' learning achievement, and they found that explicit instruction contributed to better results, especially in the contexts where English is used as a foreign language (EFL) (see a meta-analytic review by Norris & Ortega, 2001; Swain, 2000). These studies suggest that the procedures in explicit teaching such as error correction and direct explanation of the target form help students to pay attention to and understand the target form better, resulting in greater success in grammar learning. In EFL contexts like Thailand, where the students have no or little exposure to the target forms in their everyday life, it seems that explicit instruction is essential.

According to Ellis (2006), there are two types of explicit teaching methods: deductive and inductive approaches. In the deductive approach, a grammar rule is presented explicitly to the students by teachers, followed by rule drilling activities. On the contrary, in the inductive approach, the students are given examples of communicative texts containing target forms e.g., reading passages or dialogues, and are directed to pay attention to and summarize the rules themselves (Shaffer, 1989).

Different instructional approaches offer different teaching procedures, and each procedure seems to have different benefits and drawbacks. The deductive method is considered to support a teacher-led teaching style and passive learning (Fischer, 1979). Although target forms and rules are supposed to be explained by the teacher, it is doubted that the students in the deductive instruction thoroughly understand target forms and use them correctly when they use the language for actual communication. The students may not completely understand concepts of the target language. Furthermore, the rules are more emphasized than meaning in the deductive approach, and the students therefore take a passive role in the learning process.

On the other hand, the inductive approach is perceived to be more learner-centered and learners are encouraged to play an active role. Since in this teaching approach the students are required to explore the target forms and rules by themselves, they are expected to have more understanding of the grammatical rules (Brown, 2007). However, some beginner level students may feel that it is difficult for them to discover

the rules, especially complex ones. They may encounter problems when they are engaging in the learning process (Seliger, 1975). To help this group of students to learn more effectively, guided induction is developed, with the aim of raising students' awareness and noticing of the target forms (Smart, 2014). Several techniques are used to raise students' awareness and ability to notice target forms, including asking several leading questions (Herron & Tomasello, 1992), and using input textual enhancement or highlighting the target forms to make students become interested in them (Lee & Huang, 2008).

The literature in language teaching (Larsen-Freeman, 2001; Ur, 2009; Brown, 1980) suggests that deductive and guided inductive instructions should include at least 3 important steps: presentation, practice, and production. Presentation is the first step in which teachers present target forms to the students. In the inductive instruction, however, the target form is not explicitly explained by the teacher as it is in the deductive instruction, but it is presented in a communicative context where the students have to notice it themselves. The second step is practice. In this step, students will be given activities or tasks that provide them with an opportunity to practice the form presented to them in the first step. The last step is production. It is where the students are expected to apply the target language in contexts or in the set up activities. There have been many studies applying these three steps in teaching.

Arifin (2016), for example, included the three steps in his five teaching stages of tenses, and both deductive and inductive approaches were used. They were the motivating stage, presentation, practice, summary or practice, and assessment. The motivating stage, aimed to attract the students' attention to the topic. Secondly, in the presentation stage, the lesson was presented and then the teacher gave some explanation about the tense, wrote down the form, and explained how to use it. The teacher then gave students the examples of tense usage. In the third stage, the target form was practiced. The teacher provided exercises or tasks for the students to practice the target tense. Fourthly, in the summary stage, activities, such as writing about daily routines on the board, were provided as the reviewing lesson. Lastly, in the assessment stage, the students had to choose one of the topics provided by the teacher and wrote a paragraph about it. The same stages were followed in inductive teaching, excluding the presentation stage. In the latter approach, the teacher asked the students questions related to the lesson and wrote them on the board. After that the teacher elicited the grammar rules and asked some students or the whole class to summarize the target form and rules.

Tammenga-Helmantel and Bazhut (2015) also implemented the three steps: exploration, explicit explanation of rules, and the practicing phase in their deductive and inductive teaching. The exploration step in the inductive method involved presenting a text containing a high frequency of target structures. The teachers let the students construct the rules by themselves with some written instructions to guide them to the target form. Examples of the instructions were reading the text, focusing on the underlined words, and answering what happens to the verb when being used in reported speech. After that the teacher explicitly explained and summarized the rules. The students then went through the practicing stage by reading the text, analyzing the verbs, indicating subjects, and identifying the stem of the verb.

Conversely, in the deductive approach, the presentation of the grammar rules was the first step in teaching, followed by the same practicing phase, the same exercises and the same amount of time as for the inductive approach. Overall, both deductive and inductive teaching follow quite similar procedures in teaching, the main difference between the two being whether the target form is explicitly presented and explained by the teacher at the start of the teaching. If this is the case, then it is deductive teaching. If the target form is presented in communicative texts, and students are directed to the form and encouraged to conclude the target form by themselves, it is then inductive teaching.

A number of studies have been conducted to examine the effectiveness of deductive, inductive and guided inductive approaches in the teaching of grammar. There is no conclusive finding on the effectiveness of these teaching approaches. Erlam (2003) compared the effects of deductive and inductive instruction on the acquisition of direct object pronouns in French as a second language. Pretest-posttests and a delayed posttest were used to collect data from 69 secondary school students who never received any instruction on direct object pronouns. The participants were divided into three groups and randomly assigned to one of the three experimental conditions: deductive, inductive and form-focused instruction, and focus-on-forms (controlled group). Two posttests were given to all the participants in the three groups; one was immediately after the experiment and the other was six weeks delayed. The results showed that the deductive group achieved significantly greater marks than did the inductive and control groups.

Haight et al. (2007) and Vogel et al. (2011) adopted a four-stage approach for teaching grammar or PACE model from Adair-Hauck et al. (2010) in the guided inductive instruction for French college students. PACE involves the use of the text, story or contextualized examples containing targeted structures to teach grammar. Firstly, P stands for Presentation of the target form, a written or oral narrative consisting of the grammatical structure to be presented. Secondly, A stands for Attention. After the presentation, the instructors focus students' attention on a target form through practice sessions and examples. Thirdly, C or Co-construct is the way that instructors help the students to collaborate on understanding of the grammar rules by asking guided questions. Finally, E or Extension means instructors increase the students' understanding of the rules by giving them a chance to practice the grammatical structure that has just been discussed through activities.

Haight et al. (2007) investigated the effect of deductive instructional approach and guided inductive instructional approach on teaching eight grammatical structures. The results revealed the effectiveness of guided inductive approach over the deductive teaching on the long-term learning of grammar.

Vogel et al. (2011), on the other hand, compared the effect of these two approaches on short and long-term learning of 10 grammatical structures. The students' perceptions towards the two instructional approaches were also examined, and correlated with the scores obtained in each approach to investigate possible relationships. The results partially confirmed the finding of Herron and Tomasello (1992) and Haigh et al. (2007) that guided inductive instructional approach had a significantly greater effect on short-term learning of French grammatical structures. In

the long-term, the findings showed that the relationship between preferences and performances were not significant. Although students appeared to prefer a deductive approach, the guided inductive model has helped the students to perform significantly better than the deductive model.

To sum up, although, overall the explicit instruction has been proved more effective than implicit instruction for the development of second language grammatical structures, it is still not clear what types of explicit instruction, deductive or (guided) inductive approaches or both would benefit Thai learners better. This is presented in previous studies which have offered inconclusive results about the effectiveness of these two types of explicit instruction. For example, Erlam (2003) found an advantage of the deductive instruction over inductive teaching while others showed the greater effectiveness of guided induction over deductive instruction (Haight et al., 2007; Vogel et al., 2011).

One source of data which could help explain why students are successful or unsuccessful in learning is learning strategies employed by learners. Learning strategies, according to Ortega (2009), Atkinson (2011), Michell and Myles (2013), and Oxford (1990), are described as strategies, techniques, or tactics that learners employed to learn a target language. The literature suggests that there are three groups of learning strategies that are directly used to tackle learning tasks at hand in a learning process (Cohen, 1998; O'Malley & Chamot, 1990). They are memory, cognitive, and compensation strategies. Memory strategies are techniques students use to keep and bring back information in order to help them remember new information, such as grouping words that are semantically connected, using images and/or sounds to help memorize new words. Cognitive strategies assist students to understand the target form and produce new language, for example, by summarizing, analyzing, and synthesizing rules. Compensation strategies are activated to help students fill gaps in their knowledge such as guessing (Oxford, 1990).

In Thailand, grammar is one of the English language teaching focuses. Most Thai students spend more than twelve years studying English. However, they do not seem to be able to use their grammar accurately, meaningfully and appropriately in a communicative context (Noom-ura, 2013). According to Geringer (2003), teachers and their teaching approaches could be two of the main factors contributing to the problem. As two main approaches are apparent in explicit grammar teaching, deductive and guided inductive methods, both of which have some advantages and disadvantages, this study aims to investigate the effect of these instructional approaches in a Thai educational context as well as the strategies students activate in each teaching approach. This is to observe how learners react to the teaching and what factors (if any) might add to the success or failure in each learning environment. The following research questions were addressed:

1. Are there any significant differences in grammatical learning outcomes when compared between students learning with deductive and guided inductive approaches?
2. What learning strategies do the students activated while they are learning in each instructional approach?

Methodology

This was an experimental study and to achieve the purposes of this study, both quantitative and qualitative data collection methods were used. The quantitative data which comprised pretest and posttest scores were to investigate the learning gains in both instructional approaches. The qualitative data which were obtained from stimulated recall were to study learning strategies students activated in learning the target structures.

1. Participants

By means of purposive sampling, a total number of 50 students in 2 intact classes of Mathayom 3 students who took “English Foundation 6” at a public school in southern Thailand were invited to participate in this study. There were 26 students in one class and 24 in the other. All of them had studied English for an average of nine years. Class one was assigned to the guided-induction group (GI group) and the other was in the deductive instruction group (DI group).

To ensure that the participants were on the same footing when starting the experiment, the comparison of their English ability was made. Their pretest scores were compared by the use of independent t-test. The result showed that there was no significant difference in the performing scores of the students in both groups ($t=0.569$, $p >.05$). None of them, as indicated in the background questionnaire, attended tutorial classes after school or on weekends during their participation in this research.

2. Research instruments

2.1 Background questionnaire

The questionnaire consisting of 10 items was aimed at collecting data on participants’ personal information, language learning background, and English language learning experiences.

2.2 Pretest and posttest

In order to examine the participants’ understanding of the target content and investigate the learning gains in both instructional approaches, the pretest and posttest were administered. In the first week of the experimental stage, the pretest was delivered and immediately after the treatment, carried out in 14 weeks, was over, the posttest was administered. The test which contained 45 items was aimed at assessing the four target structures: past perfect, passive voice, reported speech, and conditional sentences. These four structures were chosen due to the fact that they were not part of the curriculum that this group of participants had experienced before. In this manner, it can, to some extent, be ensured that the learning gain (if any) after the experiment was not affected by the participants’ previous knowledge of the target structures. Both pretest and posttest were identical and prior to research data collection, the test was piloted and Cronbach’s alpha reliability of the test was 0.738.

2.3 Lesson plans

As the study aimed to compare the effect of the two different instructional approaches, two different sets of lesson plans which aimed to teach the same content were used. One set was designed following the concept of deductive grammar teaching and the other was guided inductive approach. The instruction in both groups followed three steps of teaching: presentation, practice and production or 3Ps'. The difference between the two sets of the lesson plans was only in the presentation stage. In the deductive instruction, the target forms and the usage were firstly presented at the presentation stage of the lesson, conversely, communicative texts containing the target forms were presented in the guided induction. As the four target structures were divided into three sub groups, overall, there were twelve lesson plans.

2.4 Stimulated recall

To obtain in-depth information on learning strategies activated by the participants while learning in the two different approaches, the stimulated recall was conducted in Thai and recorded. Worksheets and participants' notes were used as stimuli. 12 participants (six from each instructional approach: three low and three high scorers based on their pretest scores) were invited to conduct a stimulated recall after each lesson, on a one-on-one basis for 5-10 minutes. Questions used in the stimulated recalls were, for example, *how did you do the exercise in your worksheet?*, *what did you think about the picture in the warm up stage?*, and *what did you do when you got a worksheet?*

2.5 Data Analysis

The independent t-test was run to find out the significant differences in the learning performance of both groups. Then, content analysis was applied to analyze the learning strategies activated by the participants in both groups. The participants' verbal information was transcribed and coded according to classifications of direct language learning strategies offered by Oxford's (1990) framework. The reason that only direct learning strategies were of the main concern was because the study focused only on what students did when they were learning and completing the tasks in the classroom.

The coding scheme consisted of 1) memory, 2) cognitive, and 3) compensation strategies. Memory strategies are mental tools comprising creating mental linkage, using sound and image, reviewing, etc. Cognitive strategies are directly operated on incoming information and used to enhance learning, for example, grouping, and organizing. Compensation strategies are strategies used to fulfill the learners' knowledge gap, for example, guessing while reading or listening, and using synonyms.

Results

The findings in this study are divided into two main parts, according to the research questions. First the results of pretest and posttest scores of participants in both groups are provided followed by the presentation of the results to answer the two research questions,

Table 1: Pretest and posttest scores of guided inductive instruction (GI) and deductive instruction (DI) groups

Teaching Approach	Pre test		Posttest		Gain scores (Post- Pre Test)	Relative Gains Score (%)	Pair T-test	
	\bar{x}	S.D.	\bar{x}	S.D.			t	p
GI (n=26)	11.15	2.37	19.92	3.09	8.77	26.00	20.880	.000
DI (n=24)	10.75	2.64	18.08	2.02	7.33	21.34	25.040	.000

As can be seen in Table 1, when comparing the performance within the participants between the pretest and the posttest, the results show the difference in gain scores of both groups. The students in both groups performed better in the posttest, with a relative gain score of 26% in the GI group and 21.34% in the DI group. The analysis of the difference between pretest and posttest in each group shows significant value ($t=20.880$, $p < .01$ in the GI group and $t=25.040$, $p < .01$ in the DI group). This shows that both instructional approaches helped the participants to develop their grammar knowledge.

In order to answer the first research question, the independent t-test was calculated to investigate if there was any significant difference in the posttest scores of the students in the deduction instruction (DI) group, compared to those in the guided inductive (GI) instruction. As seen in Table 2, the analysis shows that the average score of the participants in the GI group ($\bar{x} = 19.92$, $SD = 3.09$) is slightly higher than that of the participants in the DI group ($\bar{x} = 18.08$, $SD = 2.02$) and the difference between the mean scores of both groups is found significant at $p < .05$ ($t=2.456$, $p = .017$) with a moderate effect size (Cohen's $d = 0.70$). The results suggest that guided induction is more effective than deductive instruction.

Table 2: Comparing the posttest scores between the GI and DI groups

Teaching Approach	Posttest		Independent T-test			Effect size (Cohen's d)
	\bar{x}	S.D.	t	df	p	
GI (n=26)	19.92	3.09	2.465	48	.017	0.70
DI (n=24)	18.08	2.02				

To answer the second research question, the stimulated recall data were transcribed and analyzed. The results show that overall, the three types of learning strategies, memory, cognitive, and compensation strategies, were employed by the participants while engaging in both teaching approaches. Following is the detailed description of what the participants activated in each strategy type.

Memory strategies were strategies that the participants used in order to memorize the information they thought important for them to know. In the grammar lessons, the information included, for example, the form of tenses and how the target form was used. What the participants did in order to memorize the information were 1)

underlining or circling the target structure and repeating it several times to remember it, 2) thinking about the association between the grammar structures that they already knew and the new grammatical structures in order to remember them easily, and 3) remembering the words or phrases by remembering their location on the board. Following is an example of students' verbalization coded under memory strategies:

*I underlined this words; verb form of past participle, in order to remember it.
(Chutipha*, conducted on 12th December 2017)*

Cognitive strategies were the strategies that the participants used in order to make them understand the main point of the lesson. In this study, it was found that in order to understand the target structures, the participants engaged in the following processes: 1) classifying a new grammar rule under a group of similar categories (e.g. tenses, verbs, subjects, 2) taking notes, underlining or using different colors to highlight the important parts of the rules, 3) summarizing the main parts of the rules within a text in their first language (Thai), and 4) relying on all the clues from the text to discover the grammar rules, as can be seen in the following excerpt:

*I read the text in a worksheet, and then summarized the target forms and used them as guidelines to do the exercise.
(Chananon*, conducted on 20th December 2017)*

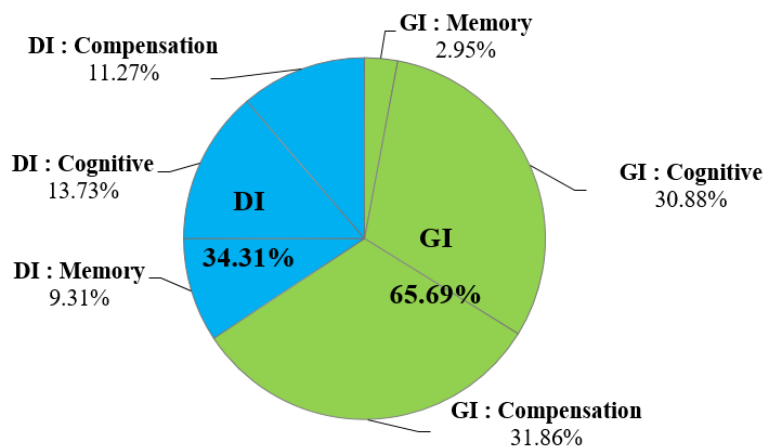
Compensation strategies were the strategies that the participants applied to compensate gaps in their knowledge and to help them understand the lessons better. The analysis shows that the participants basically relied on their friends and teacher to solve the problems in their learning and to bridge gaps in their knowledge. The strategies that they used were 1) asking the teacher to help explain the meaning of the unknown words or unclear concepts, 2) asking friends to explain what the teacher explained or what the teacher asked them to do, 3) looking back at previous lessons in order to get more information about the current one, and 5) guessing the meaning of words while reading the text. An example of students' verbalization was:

*I discussed with my friends about how to distinguish between command and request sentences.
(Ekawat*, conducted on the 23rd January 2018)*

Figure 1 presents an overall picture of the learning strategies used by the participants in each instructional approach.

* Pseudonym

Figure 1 Overall learning strategies activated by participants in both groups



Although the participants activated similar types of learning strategies in learning grammar, the analysis shows that there was a difference in terms of the frequency of strategies used. The strategy reported used by the GI group accounted for 65.69% whereas the strategy used by the DI group showed 34.31%. The most frequently activated learning strategies by the participants in the GI group were compensation (31.86%) and cognitive strategies (30.88%). These numbers were about three times as much as those activated by the DI group. The least frequently used strategies in both groups were memory strategies. However, the frequency of the memory strategies used by the DI group (9.31%) was higher than those used by the GI group (2.95%).

Discussions

According to the results of research question 1, it could be concluded that although both instructional approaches appeared to help students improved their grammar knowledge, guided induction is more effective than deductive instruction for the teaching of certain grammatical structures to Mattayom 3 students, in Hatyai, Thailand. The findings support some previous studies (Herron & Tomasello, 1992; Haight et al., 2007; Vogel et al., 2011; Cerezo, 2016), which demonstrated that guided inductive approach provided better results in grammar instruction than the deductive one.

A possible reason to explain why the students benefitted more from the guided inductive teaching could be that the participants in the guided inductive group had exposure to a number of examples of target structures, and then they were encouraged and required to think about the target form and formed a hypothesis about the rules with the guidance from the teachers. In this process of learning, the students were believed to have actively engaged in their learning. This is as shown in the number of learning strategies they reported using during the lessons. These findings are consistent with cognitive theories which view learning as an active process requiring the learners'

engagement. Herron and Tomasello (1992) proposed that students learn the best when they form a hypothesis and get immediate feedback and guidance from the teachers.

With regard to research question 2, the results from the stimulated recall suggest that the participants in both groups relied on different strategies in their learning. Within the guided inductive group, the participants activated learning strategies more often than the deductive group. This aligned with O'Malley and Chamot (1990), which showed that students would be more successful in learning if they played an active role and activated more strategies.

Memory strategies appeared to be the least frequently used strategies of the three. Although the participants in both groups relied the least on these strategies, the DI group activated them more often than did the GI group. This could be because the explicit presentation of grammar in the deductive instruction made students believe that they had to memorize the grammatical form and its rules rather trying to understand how the rule worked in a context.

On the other hand, the guided induction group appeared to use less memory strategies but more compensation and cognitive strategies. The participants in this group appeared to rely on several cognitive strategies to understand the target form and to fill gaps in their knowledge during the lessons. They sometimes asked the teacher and friends for help with the meaning of the unknown words when doing the tasks. The fact that the students had to discover rules by themselves made them active learners and made them more successful in learning. If the purpose of the teaching is to help students understand target forms and be able to use them later in a more communicative context, it seems that guided inductive instruction is crucial.

Conclusion

This study investigated the effects of two explicit approaches of grammar teaching: deductive and guided induction in a Thai EFL context. The findings suggest the guided induction is more effective than deductive instruction. Further, the learning strategies activated by participants in both groups showed that guided inductive group activated more strategies than did the deductive group, and this made students more successful in learning the target forms.

The findings of the current study could be used as guidelines for teachers choosing suitable teaching approaches to enhance students' learning of grammar as well as helping less successful students to become more effective ones and to learn language effectively. However, the generalization of the findings should be done with care, as due to a time constraint, the study focused only on one group of learners (Mathayom 3 students) and only certain grammar structures were targeted. For further studies, it is recommended to investigate the effectiveness of guided inductive teaching with different contents and levels of learners.

Acknowledgement

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Bio-data

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Appendix E: Paper 2

Does Using Similar Content but Different Approaches Result in Different Strategies and Different Achievement? Comparing Deductive and Guided Inductive Grammar Teaching*

เนื้อหาเดียวกันแต่วิธีการสอนต่างกันส่งผลต่อการใช้กลยุทธ์การเรียนรู้และผลการเรียนที่ต่างกันหรือไม่ การเปรียบเทียบการสอนไวยากรณ์แบบนิรนัยและแบบอุปนัย

Wanwisa Watcharakorn (วันวิสา วัชรากร)**

Anchana Rukthong (อัญชณา รักษ์ทอง)***

Abstract

This quasi-experimental study attempted to explain how students learn in the deductive and guided inductive teaching by investigating the learning strategies that they activate in each instructional approach across different target structures. A total of 50 Thai Mathayom 3 students from two intact classes took part in the study. Four grammatical structures – Past perfect, Passive voice, Reported speech, and Conditional sentences – were targeted in both approaches. To investigate the learning strategies used, 12 participants (six from each instructional approach) were invited to take part in stimulated recalls after each lesson. The participants' pretest and posttest scores were also compared to take learning achievements into account. The analysis of stimulated recall data showed that the participants in each group relied on strategies to different extents while learning. Cognitive and compensation strategies were used by a higher number of the participants in the guided induction group than the deductive group. However, the deductive instruction group reported using memory strategies more frequently than the guided inductive group. Compensation strategies were the most frequently used strategies in learning Past Perfect and Conditional sentences. Cognitive strategies were the most frequently used in Reported speech. Memory strategies, however, were used least frequently in learning Passive voice. The analysis of pretest and posttest scores across target structures, in addition, showed that, both teaching approaches helped learners to improve their grammatical knowledge in three of the four structures investigated; Past perfect, Passive voice, and Conditional sentences.

Keywords: learning strategies; guided inductive instruction; deductive instruction

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บทคัดย่อ

วัตถุประสงค์ของงานวิจัยกึ่งทดลองนี้ คือเพื่อศึกษาและอธิบายกลยุทธ์ในการเรียนภาษาอังกฤษที่นักเรียนใช้ในการเรียนโครงสร้างไวยากรณ์ที่กำหนดให้โดยวิธีการสอนแบบนิรนัยและแบบอุปนัย ทั้งนี้โดยการสำรวจกลยุทธ์และผลสัมฤทธิ์ในการเรียนของผู้เรียนในวิธีการสอนทั้งสองแบบ กลุ่มตัวอย่างคือนักเรียนชั้นมัธยมศึกษาปีที่สาม จำนวนสองห้อง รวมจำนวน 50 คน เรียนไวยากรณ์จำนวนสี่โครงสร้าง คือ Past perfect, Passive voice, Reported speech, และ Conditional sentences. เครื่องมือที่ใช้ในการเก็บข้อมูลประกอบด้วย การสัมภาษณ์แบบกระตุ้นความจำ จากกลุ่มตัวอย่างทั้งสองกลุ่ม กลุ่มละหกคน รวมทั้งหมด 12 คน และแบบทดสอบก่อนและหลังเรียนซึ่งเป็นข้อสอบชุดเดียวกันใช้ทดสอบกับผู้เรียนทั้งหมดทั้งสองกลุ่ม ข้อมูลจากการสัมภาษณ์แบบกระตุ้นความจำพบว่าผู้เรียนทั้งสองกลุ่มใช้กลยุทธ์การเรียนภาษาอังกฤษที่แตกต่างกัน โดยกลุ่มที่สอนโดยวิธีอุปนัยใช้กลยุทธ์ด้านการทดแทนและกลยุทธ์ด้านพุทธิปัญญามากที่สุด ในขณะที่กลุ่มที่สอนโดยวิธีการสอนแบบนิรนัยใช้กลยุทธ์ด้านจำมากกว่ากลุ่มที่สอนโดยวิธีอุปนัย ผู้เรียนใช้กลยุทธ์ด้านการทดแทนเยอะที่สุดในการเรียนไวยากรณ์เรื่อง Past Perfect และ Conditional sentences ในขณะที่เดียวกัน กลยุทธ์ด้านพุทธิปัญญานำมาใช้เยอะที่สุดการเรียนไวยากรณ์เรื่อง Reported speech กลยุทธ์การเรียนที่ถูกใช้น้อยที่สุดเมื่อเปรียบเทียบกับกลยุทธ์การเรียนอื่นๆ คือกลยุทธ์ด้านการจำ แต่ถูกมาใช้เยอะที่สุดในการเรียนโครงสร้างเรื่อง Passive voice อย่างไรก็ตามผล ผู้วิจัยใช้ T-test เพื่อหาความต่างของคะแนนที่ได้ก่อนเรียนและหลังเรียนในแต่ละโครงสร้างไวยากรณ์ พบว่าวิธีการสอนทั้งสองแบบพัฒนาความรู้ด้านไวยากรณ์ของผู้เรียนในสามโครงสร้างคือ Past perfect, Passive voice, และ Conditional sentences

คำสำคัญ: กลยุทธ์การเรียนภาษาอังกฤษ, การสอนแบบอุปนัย, การสอนแบบนิรนัย

Introduction

Background to the study

Deductive and inductive grammar instruction, two approaches to explicit grammar teaching, have long been employed in English as a Foreign Language (EFL) education (Ellis, 2006). A deductive approach, which arises from deductive reasoning, starts from a presentation of a general concept or rule and moves on to grammar drills in different forms. It is a traditional teaching approach in which a target structure is explicitly presented by the teacher and learners are expected to learn through the teacher's presentation and grammar exercises (Thornbury, 1999).

According to Walter (1995), deductive teaching is considered to be teacher-centered as in the teaching and learning process, the teacher takes a main role in the classroom. Specifically, the teacher conducts lessons by presenting and explaining all the concepts of grammar rules to students. The students are expected to complete the tasks given to practice all those concepts. This teaching approach, nevertheless, is beneficial in that it allows the teacher to get straight to the main point and be time-saving, which is suitable for the students who prefer to be directly taught with the target forms.

An inductive approach, which derives from inductive reasoning, proceeds from specific rules to general concepts (Felder & Henriques, 1995). That is, the learners in this approach are provided with different texts containing target forms and directed to pay attention to and explain the target structure by themselves (Shaffer, 1989). In contrast to deductive teaching, inductive teaching is more learner-centered. That is, the learners are supposed to play an active role in their learning. The learners are presented with communicative texts containing the examples of target forms and are required to induce the target forms by themselves (Brown, 2007). Although this approach encourages learners to play an active role, the fact that the learners have to discover the forms by themselves with the help of the teacher appears to be more time and energy consuming in some learning situations (Goner, Phillips, & Walters, 1995). It also appears to frustrate students who prefer teacher's explanation or direct presentation of grammar structures (Widodo, 2006).

Given that some learners at a beginning level may find it difficult to discover rules by themselves, especially the complex ones (Seliger, 1975), guided induction is therefore developed to facilitate the learning process, specifically to help the learners notice and pay attention to the target forms (Smart, 2014). A number of techniques are applied to for this purpose, such as asking leading questions (Herron & Tomasello, 1992), and using input textual enhancement or highlighting the target forms to bring them to students' attention (Lee & Huang, 2008).

Previous studies have investigated the benefits of each instructional approach – deductive and inductive, they, however, do not provide conclusive findings. Some studies were conducted to compare the effectiveness of these two teaching approaches focusing on one grammatical structure. For example, Erlam (2003) investigated the effectiveness of the deductive and inductive teaching on direct object pronouns in French as a second language. The finding suggested that the deductive group attained significantly greater scores than did the inductive and control groups.

In a similar manner, Tammenga-Helmantel and Bazhut (2015) investigated the effectiveness of both teaching approaches in the instruction of subjunctive for reported speech in German. The results revealed that both instructional approaches had a positive effect on the learning outcome. Further, Dankittikul and Laohawiriyanon (2018) compared the effects of deductive and inductive teaching (Paper-based concordance). Their finding is in line with Tammenga-Helmantel and Bazhut's (2015) conclusion that the deductive teaching was as effective as paper-based concordance instruction (inductive approach). Additionally, Gorat and Prijambodo (2013) carried out a quasi-experimental study to compare the effectiveness of deductive and inductive approaches as well as the students' perceptions towards these approaches in teaching conditional sentences. The results

showed the inductive approach had a greater effect on both learning performance and preference.

Other studies were conducted to measure the effectiveness of deductive and guided induction on a set of more than one grammatical structure. Haight, Herron, and Cole (2007) and Vogel, Herron, and Cole (2011) studied the effect of both approaches on learning eight and ten grammatical structures of French college students. The students' perceptions towards the two instructional approaches were also examined in Vogel et al.'s study (2011) and correlated with the scores obtained from each approach. The results showed that the guided inductive instructional approach had a significantly greater effect on short-term learning of French grammatical structures. For the long-term learning, there was no significant difference between preferences and performances. Even though the students preferred the deductive instruction, the guided teaching performed significantly better than the deductive approach. In a similar manner Watcharakorn and Rukthong (2018) compared the effects of these two instructional approaches on grammar learning of four target structures in one Thai EFL context. The results showed that guided inductive performed significantly better than the deductive instruction.

Although a number of studies have been conducted to search for the best way to deliver grammar to students (Erlam, 2003; Haight et al., 2007; Vogel et al., 2011; Gorat & Prijambodo, 2013; Tammenga-Helmantel & Bazhut, 2015), those studies have presented no consensus. It seems that several factors could contribute to the effectiveness and ineffectiveness of each instructional approach, including the structure that is the target of the instruction, the ability to analyze the rules of the learners, as well as learners' learning styles and characteristics (Ellis, 2006). As a consequence, no single teaching method could claim to be more important than the other (Ellis & Shintani, 2014). Richards (2014) in particular recommends that using a variety of teaching approaches would be more beneficial since it could better serve a group of learners with different learning styles.

One source of information that could reveal why learners either succeed or fail in language learning, as pointed out by Oxford (1990), is the use of learning strategies. Ortega (2009), Atkinson (2011), Michell and Myles (2013) described learning strategies as methods or techniques that learners use or apply to learn a target language. According to Ellis (1994), the most comprehensive classification of learning strategies is proposed by Oxford 1990. Oxford (1990) separates learning strategies into two main categories – direct and indirect strategies. Direct strategies are used directly in a learning process to tackle learning tasks at hand. This study focused only on direct strategies, which the learners used to learn the tasks given to them. This was to understand how the learners approached the tasks and what made them succeed or fail in learning new content.

Direct learning strategies are subdivided into three main groups: memory, cognitive, and compensation strategies. Memory strategies are what students use to store and bring back information in order to help them remember new information. Cognitive strategies are techniques that help students to better understand a target form and produce new language. Compensation strategies are applied to assist students to bridge gaps in their knowledge (Oxford, 1990).

There have been a number of studies investigating the use of learning strategies in correlation to proficiency levels. For example, Bremner (2016) investigated the relationship between the strategy use and the level of proficiency of 149 university students. Whereas, Supakorn, Feng and Limmun (2018) examined the grammar learning strategies of two different groups of learners: Chinese and Thai students. The results showed that students who had high proficiency level reported using more learning strategies than did the lower ones.

The related previous studies tend to report on what strategies were used and to what extent the use of strategy is significantly associated with learning achievement in learning. It seems to be clear that better learners are likely to use more learning strategies than poorer ones. However, it remains largely unclear why some learners did not use the strategies even when they have been trained to or even when they used strategies, why some learners are not as successful as they should have been.

Taking what the literature suggests into account, this study, therefore, aims to explain how the students learn in the deductive and guided inductive teaching, by investigating learning strategies that they activated in each instructional approach and across target structures. It is in particular to compare whether they rely on the same learning strategies when different instructional approaches were employed.

To achieve the aims of the study, three research questions were formulated as follows.

1. What learning strategies do the learners activate to learn four target structures?
2. Are the learning strategies activated similar or different when compared between the two instructional approaches and across the target structures investigated?
3. To what extent are the learners successful in learning the four target structures?

Research Methodology

Both qualitative and quantitative data were collected in this study. The qualitative data from stimulated recalls were to explore the strategies students activated in learning

the target structures. The quantitative data, pretest and posttest scores, show the learning outcome from both deductive and guided inductive teaching.

1. Participants

A total of 50 students in two intact classes of Mathayom 3 students who took “English Foundation 6” at a public school in southern Thailand participated in this study. Class one, consisting of 26 students, was assigned to be the guided-induction group (GI) and the other, comprising of 24 students, acted as the deductive instruction group (DI). All the participants had studied English for an average of nine years. Generally, their English proficiency was low, as indicated by their grades in the previous English course. Prior to the experiment phase, a comparison of the participants’ pretest scores was made to ensure that the participants were at the same level of English ability. The analysis presented no statistically significant differences in the performing scores of the participants in both groups ($t=0.569$, $p>0.05$). The analysis of the background questionnaire also showed that none of them attended tutorial classes after school or on the weekends before and during their participation in this study.

2. Lesson plans

As the study aimed to investigate learning strategies that the participants activated to study the target structures and compare the strategy use between the two instructional approaches and across the target structures, two different sets of the lesson plans were designed to teach four target grammatical structures: past perfect, passive voice, reported speech, and conditional sentences. One set of the lesson plans was constructed following the idea of deductive grammar teaching and the other followed the guided inductive approach. The instruction in both sets of the plans followed the presentation, practice and production (PPP) model. In this manner, a new target form was firstly presented and explained, practiced, and finally produced by the students in either spoken or written forms or both. The difference between these two sets of the lesson plans was only at the presentation stage. In the deductive instruction, the target forms and usage were clearly presented and explained to the students by the teacher, whereas, in the guided induction, communicative texts containing the target forms were presented and the teacher directed students’ attention to the forms by asking guiding questions. As the four target structures were divided into three sub groups, overall there were twelve lesson plans created.

3. Data Collection

The study was carried out over 14 weeks while the participants were taking ‘English Foundation 6’ in the second semester of the 2017 academic year. One period of 50 minutes a week was allocated to this experiment. Data collection was divided into three periods.

3.1 At the beginning of the experiment, a pretest and a background questionnaire were administered to the participants.

A pre-test consisting of 45 items was used to investigate the participants’ knowledge of four target grammatical structures. These four structures were chosen due to the fact that they were not part of the English curriculum that the participants had encountered before.

This is to ensure that the learning gains of participants in both groups (if any) were not affected by the participants' previous knowledge of the target structures. The test was piloted before the main data collection, with the reliability value of 0.738.

A *background questionnaire* comprising 10 items aimed to collect data on participants' personal information, language learning background and English language learning experience.

3.2 During the experiment, stimulated recalls were conducted at the end of every lesson.

Stimulated recalls were used to obtain in-depth information on learning strategies activated by the participants while learning the target structures. 12 participants (six from each instructional group: three high and three low scorers based on the pretest) were invited to conduct a stimulated recall immediately after each lesson. The stimulated recalls were organized in Thai on a one-on-one basis for 5-10 minutes per participant. The questions asked in the stimulated recalls were for example: *How did you do the exercise in the worksheet?*, *How did you get this answer? What were you thinking about?*, and *Why did you e.g., underline, circle or highlight this word?*

During the stimulated recall process, participants' worksheets and notes taken during the class were used as stimuli to help the participants recall their thought process while learning in the classroom. The stimulated recall procedure was audio recorded.

3.3 At the end of the experimental stage, the posttest which was identical to the pretest was delivered. This was to investigate learners' achievement (if any) after the experiment.

4. Data Analysis

To investigate the learning strategies activated by the participants in both groups, content analysis was used to analyze stimulated recall data. The recorded verbal data were transcribed and coded according to the classifications of direct language learning strategies by Oxford (1990), which comprised of 1) memory, 2) cognitive, and 3) compensation strategies. To investigate students' learning achievement, pre-test and posttest scores of the participants in each group were compared by the application of Paired-Samples T-test.

Results

Findings are divided into three main parts, according to the research questions. There are 1) learning strategies used by the learners, 2) the extent to which the strategy use was different when compared between the deductive and guided inductive teaching and across the four grammatical structures, and 3) learning achievement.

1. Learning strategies learners activated to learn four target structures

Three types of learning strategies, memory, cognitive, and compensation strategies, were activated by the participants in both groups. Following is the detailed description of what the participants employed in each strategy type.

Memory strategies were found to be used by the participants in both groups. In this study, the important information that the participants thought they should remember includes, for example, the form of tenses and how the target form is used. What the participants did in order to memorize the information are 1) underlining or circling the target structure and repeating it several times to remember it, 2) thinking about the association between the grammar structures they already knew and the new grammatical structures in order to remember it easily, and 3) remembering the words or phrases by remembering their location on the board. An example of students' verbalization coded under memory strategies is:

I knew this sentence is about the past event because I remember that the verb form of the past event ending with-ed.

(Sunisa, conducted on the 20th December 2017¹)*

Cognitive strategies were used to understand the main point of the lessons. In this study, four cognitive strategies were found being used by the participants: 1) classifying a new grammar rule under a group of similar categories (e.g. tenses, verbs, subjects, 2) taking notes, underlining or using different colors to highlight the important parts of the rules, 3) summarizing the main parts of the rules within a text in their first language (Thai), and 4) relying on all the clues from the text to discover the grammar rules. This can be seen in the following excerpt:

I've highlighted the important verb form in red, the time expression in pink, and the subject pronoun in green.

(Wanna, conducted on the 9th January 2018¹)*

Compensation strategies were applied to compensate for gaps in knowledge and to understand the lessons better. The analysis shows that the participants basically relied on their friends and teacher to solve the problems in their learning and to fulfill gaps in their knowledge. The strategies that they reported using are 1) asking the teacher to help explain the meaning of the unknown words or unclear concepts, 2) asking friends to explain what the teacher explained or what the teacher asked to do, 3) looking back at previous lessons

* Pseudonym

¹ As stimulated recalls were conducted in the participants' first language (Thai), the excerpts provided in the result session were translated by the researcher into English.

in order to get more information about the current one, and 4) guessing the meaning of words while reading the text. An example of students' verbalization is:

I didn't know the meaning of this word so I asked the teacher.

(Somchai , conducted on the 19th December 2017¹)*

2. The extent to which the strategy use was different when compared between the deductive and guided inductive teaching and across the four grammatical structures

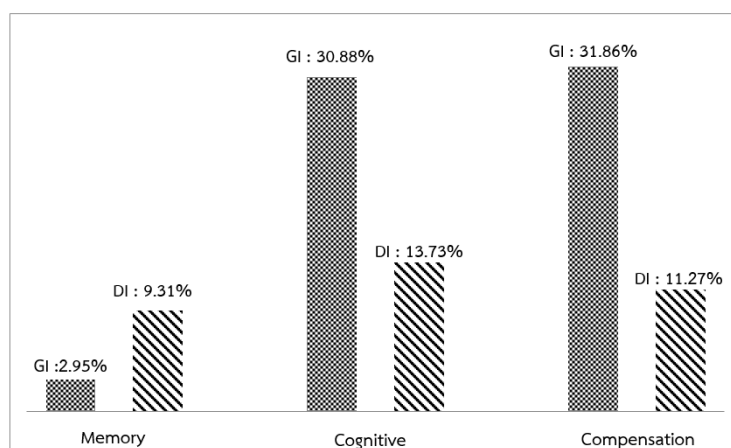


Figure 1 Overall learning strategies activated by participants compared between the deductive and guided inductive groups

The comparison between the learning strategy use by the by the deductive and guided inductive groups showed that similar types of learning strategies were activated. Overall, the participants in the guided inductive group reported activating the strategies more often than the deductive group (65.69% and 34.31% respectively). Additionally, looking into the frequency of the each types of strategies used, it was found that the GI group used compensation (31.86%) and cognitive strategies (30.88%) more frequently than the DI group, and the numbers were about three times as much as those activated by the DI group. The least frequently used strategies in both groups were memory strategies. However, the frequency of the memory strategies used by the DI group (9.31%) was higher than those used by the GI group (2.95%).

* Pseudonym

¹ As stimulated recalls were conducted in the participants' first language (Thai), the excerpts provided in the result session were translated by the researcher into English.

When compared across the four target structures – Past Perfect Tense, Passive Voice, Reported Speech, and Conditional Sentences, the results show that there is a variation in the strategies used (see Figure 2).

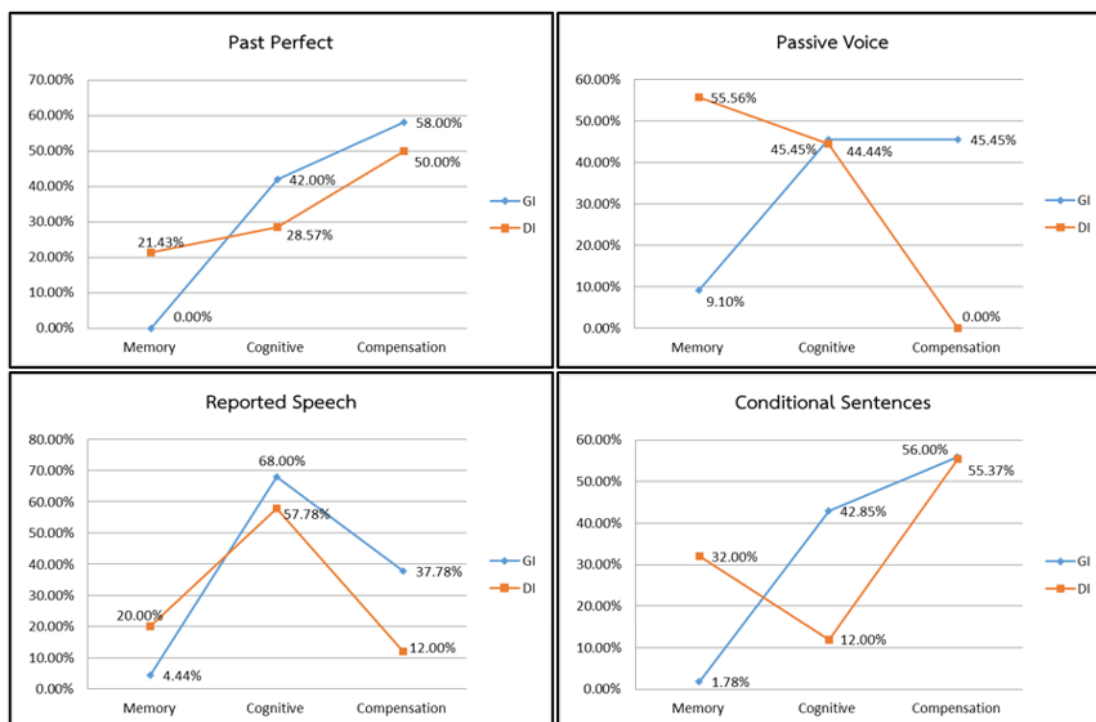


Figure 2 Learning strategy use compared across the four target structures

The analysis showed very different patterns of strategy used when different structures were instructed. For Past Perfect and Conditional sentences, the participants reported using compensation strategies the most frequently of all the strategies used (50 - 58% for Past Perfect and 55.37%-56% for Conditional sentences). This can be implied that gaps in the participants' knowledge occurred most of the time in learning these two structures and to try to solve the problems, the participants compensated the gaps in their knowledge by getting help from their friend and teacher and going back to their previous lessons in their attempt to understand the content. For Reported Speech, the results showed that the participants used cognitive strategies the most frequently (57.78%-68%), showing that while learning the participants spent most of the time understanding the content rather than trying to remember it or compensating gaps in their knowledge. Although, overall memory strategies were used the least frequently, compared to their counterparts, they were used the most frequently by the DI group in Passive Voice (55.56%) and there appeared no evidence of compensation strategies used in this topic by the DI

group. This could mean that the participants in the DI group spent most of the time in learning passive voice to remember what the teacher presented to them.

3. Learning achievement compared across the four target structures

Table 1 Pretest and posttest scores of the guided inductive group (GI) across the four target structures

Target Structures	GI Group						Relative Gains Score (%)
	Pretest		Posttest		T-test		
	\bar{X}	S.D.	\bar{X}	S.D.	t	p	
Past perfect	3.08	0.76	6.84	1.50	11.774	.000*	54.34
Passive voice	3.77	0.99	6.27	1.69	8.969	.000*	40.13
Reported speech	1.03	0.91	1.36	0.48	1.994	.057	3.68
Conditional sentences	2.87	1.15	5.43	1.67	14.245	.000*	35.90

*p<0.01

Table 2 Pretest and posttest scores of the deductive instruction group (DI) across the four target structures

Target Structures	DI Group						Relative Gains Score (%)
	Pretest		Posttest		T-test dependent		
	\bar{X}	S.D.	\bar{X}	S.D.	t	p	
Past perfect	3.16	1.45	5.58	1.12	10.063	.000*	35.38
Passive voice	3.14	1.33	5.50	0.98	10.552	.000*	34.40
Reported speech	1.08	1.01	1.45	0.53	2.062	.051	4.15
Conditional sentences	3.05	1.61	5.11	1.23	9.534	.000*	29.64

*p<0.01

Tables 1 and 2 present the comparison of the pretest and posttest scores across the four target structures in each instructional approach, guided inductive and deductive instruction respectively. The analysis of the difference between pretest and posttest scores within the groups shows significant values for three structures: past perfect, passive voice, and conditional sentences. For reported speech, the analysis, however, did not show a significant value ($t=1.994$, $p=.057$ in GI group and $t=2.062$, $p=.051$ in DI group). These findings show that the participants did not improve their knowledge about reported speech, no matter what teaching approach (deductive or guided inductive teaching) was used.

Table 3 Comparison of posttest scores of guided inductive (GI) and deductive instruction (DI) groups across four target structures

Target Structures	GI Group		DI Group		T-test independent		Effect size (Cohen's <i>d</i>)
	\bar{X}	S.D.	\bar{X}	S.D.	t	p	
Past perfect	6.84	1.50	5.58	1.12	2.719	.009*	0.95
Passive voice	6.27	1.69	5.50	0.98	1.951	.057	0.56
Reported speech	1.36	0.48	1.45	0.53	0.394	.695	0.18
Conditional sentences	5.43	1.67	5.11	1.23	1.103	.276	0.22

* $p < 0.01$

The independent t-test was calculated to investigate if there is any significant difference in the posttest scores when compare across four grammatical structures. As can be seen from Table 3, the average posttest score of GI group is higher than DI group in all the structures. Above all, a significant difference was found only for past perfect ($t=2.719$, $p=.009$) with a large effect size (Cohen's $d = 0.95$). Based on this finding, it could be concluded that guided inductive instruction is more effective and suitable in helping the participants to improve their knowledge about past perfect than deductive instruction.

To sum up, both teaching approaches, to a large extent, helped learners to improve their grammatical knowledge in three of the four structures investigated, which are past perfect, passive voice, and conditional sentences, but this was not the case for reported speech. However, it appeared that levels of learning achievement varied according to the teaching approaches applied and structures targeted. While the difference in teaching approaches applied did not affect the learning of two target structures –passive voice and conditional sentences, it did affect different achievement in the learning of past perfect. That is, the students achieved better results for past perfect when being taught in the guided inductive manner.

Discussion

1. Learning strategy use

The results demonstrated that the participants in both groups relied on different strategies in the process of learning the four target structures. The guided inductive group appeared to use less memory strategies but more compensation and cognitive strategies. These two types of strategies used to understand the content are delivered and to discover rules by presented. This made them active learners in their own learning process and made them more successful in learning. This finding is in line with the constructivist concept which indicates that knowledge construction occurs when the learners are actively involved to discover or construct their own knowledge in the process of learning (Fang, 2009; Abuseileek, 2009).

The DI group activated different types of learning strategies depending on the target structures. Compensation strategies were the most frequency used in past perfect and conditional sentences. This might be because of the content in these two structures require students to understand the context rather than remember how the rules are used in a context. Whereas, memory strategies reported to be used the most frequency in learning passive voice. It can be implied that the content in passive voice make students believe that they have to listen to their teacher, memorize the grammatical forms and its rules that the teacher presented to them rather trying to understand how the rule works in a context. This supports the transmission of knowledge model in which language or knowledge is transferred from teachers to learners. The role of the learners are to understand and memorize instead of manipulate or construct their own knowledge (Fleming, 2018).

2. Learning achievement

The findings suggest that both instructional approaches helped the learners to develop their grammatical knowledge of Past perfect, Passive voice, and Conditional sentences. Only knowledge of Reported speech was not found to be improved, irrespective of what teaching approach (deductive or guided inductive teaching) was used. Although the cognitive strategies were reported to be used the most frequency in both groups, the results showed the lowest achievement score in both groups, compared to the other target structures. This might be because of the complexity of reported speech itself. To create a reported sentence, students had to involve a lot of thinking and go through several steps. For example, they had to make changes in pronoun use, tense sequencing, time expressions, word order, etc. The information from the stimulated recalls revealed that some students were confused about how to transform the sentences, especially reported questions. Some of them precisely recognized all the steps of the transformation but were uncertain about tense sequencing, change of pronoun and word order (due to lack of prior knowledge).

When comparing the learning achievement across four grammatical structures, it appeared that the students achieved better results for past perfect when being taught in the guided inductive instruction. This confirms what Fischer's (1979) and Robinson's (1997) suggestion that the target structures which are similar to the learners' L1 are more suitable for teaching by applying inductive or guided inductive approach.

One reason to explain the greater success in learning Past perfect than the other structures in this study could be the fact that to understand the use of past perfect, learners have to rely on the context, therefore, the learners have to understand the meaning and the sequence of the situation in the context before applying the correct form of past perfect sentence as reflected in learning strategies used in past perfect structure. That is, the students activated the most compensation strategies to compensate gaps in their knowledge and to help them understand the context of past perfect better.

Conclusion and pedagogical implications

This study aimed to explain how the students learn in the deductive and guided inductive teaching, by investigating their learning strategies in each instructional approach and comparing across four target structures. The results show that the learners in the guided inductive group activated more cognitive and compensation strategies than did the deductive group, and this made students more successful in their own learning process. The investigation of the learning strategies across target structures also showed very different patterns of strategy used when different structures were instructed. Since, different teaching approaches appeared to trigger different learning strategies, leading to different degrees of learning achievement, the selection of teaching approaches should be done with care. The guided inductive teaching is beneficial in teaching the structures that are simple and relevant to learners' first language. The deductive teaching is useful when complex structures (involved several steps of thinking) are targeted.

Based on these findings, it is recommended that teachers assess their own teaching content and choose the teaching approach that would suit specific teaching purposes. More importantly, the characteristics of the target structure and students' linguistic background should be taken into account. For instance, deductive teaching appears to be a more suitable choice than guided inductive instruction to teach more difficult and complex structures, especially the structures that involves thinking in several steps. In other words, the complexity of Reported speech needs the teachers to help the students by providing precise explanation or deductively teaching the grammar rules. As Van and Borst (2012) have proposed that providing the students with a clear explanation before the tasks will enable them to process the target structures accurately. Hammerly (1982) also recommends that the explanation about grammar should be short and to the point, since if it is extensive, too complex, and covers many technical terms, students will find it difficult to learn or understand it.

Recommendations for further research

The findings of the current study could be used as guidelines for teachers in choosing suitable teaching approaches to enhance students' learning of grammar as well as helping students to become more effective ones and to learn language effectively. However, the generalization of the findings should be done with care, as due to a time constraint, the study focused only on one group of learners (Mathayom 3 students) who are low proficiency and only certain grammar structures were targeted. For further studies, it would be interesting to further investigate the effectiveness of the grammar teaching which focuses on different structures and proficiency levels of the learners as well as other factors that may either facilitate or obstruct grammar development.

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