# The Effects of the Integrated Inductive Approach on GCR Task and DDL in Enhancing Thai EFL Learners' Logical Connector Knowledge

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## Abstract

This study was aimed to investigate the effects of the integrated inductive approach between grammar-consciousness raising task (GCR task) and data-driven learning (DDL) in enhancing EFL learners' logical connector knowledge by comparing with a deductive approach. The study adopted a quasi-experimental design. Sixty twelfth-grade students from two classes at a public high school were divided into two groups: 30 in an experimental group and 30 in a control group. According to the results of CEFR test, English proficiency of both groups was mixed and quite low especially in writing skill. The integrated inductive approach on the GCR task and DDL was implemented in five lesson plans with ten different logical connectors. The instruments consisted of a logical connector test implemented as pre-test and post-test and a questionnaire. The data were analyzed using an independent t-test, a paired t-test, and descriptive statistics. The results revealed that post-test scores of the group implemented with the integrated inductive approach were higher than the group implemented with the deductive approach. The results indicated that the students taught with the integrated inductive approach enhanced their logical connector knowledge significantly at the 0.05 level of statistics. They also had positive attitudes toward the integrated inductive approach. The significant characteristics of the integrated inductive approach did not only motivate second language communication but also enhance the feature of discovery learning. The study contributed pedagogical implications for logical connectors and grammar teaching in EFL setting.

Keywords: Task-based language teaching, grammar-consciousness raising task, data-driven learning, logical connector

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## Introduction

Grammar is considered as fundamental to language, so language does not exist without grammar. It is an underlying knowledge of rule systems that can be formed in spoken or written production (Nassaji & Fotos, 2011 ; Richards & Burns, 2012). Hence, language learners can acquire or learn the language effectively by knowing these rule systems (Sah, 2015).

There are several grammar rules which are vital for language learners to be proficient language users. Among these rules, logical connector knowledge is considered as one of the essential grammatical rules as it is used to connect clauses, sentences, or paragraphs to indicate a logical relationship (Ucar & Yukselir, 2017). Thus, the knowledge of logical connector benefits EFL learners, especially high school learners as the national curriculum indicates that they need to be able to write basically at a sentence level. However, the previous studies on grammar teaching found that the use of logical connectors was one of the four common grammatical errors among EFL learners (Jenwitheesuk, 2009 ; Prommas & Sinwongsuwat, 2013 cited in Dankittikul & Laohawiriyanon, 2018).

The setting where the researcher worked was an EFL high school. Grammar was taught with deductive grammar lessons which rules were explained explicitly by teachers. Many students could understand the lesson and perform well in classroom, but they tended to forget it afterward. Thus, the same grammar lessons were repeated with the same grammar points every year. Repeating the lessons on the same language points indicated the failure of deductive grammar teaching in this setting. To deal with this problem, the researcher had been observing the use of logical connectors among high school students in their writing classes. The researcher found that it seemed to be a problematic grammar point since there was more than one way to use logical connectors to join ideas together. While some students overused the same logical connectors as they did not know many connectors, many of them who knew the meaning of logical connectors often misused it. This problem might result from the lack of grammatical rule awareness, the lack of sentence formation, and the first language interference. Thus, the researcher was interested in finding an effective grammar teaching method to deal with this problem.

Historically, grammar teaching approaches have been changing resulting from several theoretical and empirical developments in the field of language teaching. The changes in grammar teaching can be viewed in three general instructional approaches: grammar-based approach, communication-based approach, and the recent one, form-focused approach. The form-focused approach is the integration of strengths from two previous approaches.

That is, it focuses on both grammar and communication (Nassaji & Fotos, 2011 ; Lightbown & Spada, 2013).

With the change into form-focused instruction, task-based language teaching (TBLT) has become an interesting teaching approach for grammar teaching (Nassaji & Fotos, 2011). The TBLT framework was first developed by Willis (1996) during the communicative grammar teaching period. However, Willis' TBLT framework was proposed in the communication-based period which was designed to focus on communication rather than grammar. Then, the task type for grammar teaching was further developed by Ellis (2003).

Ellis (2003) argued that TBLT can also be used to teach language forms. He further developed the framework for TBLT by dividing tasks into two types: unfocused tasks and focused tasks. While the unfocused tasks do not focus on linguistic competence, the focused tasks lead to a new understanding for TBLT on the inclusion of grammar in task-based language instruction known as structure-based focused task or grammar-focused task (Ellis, 2003).

The grammar-focused task has been proposed aiming at making grammar form obvious and meaningful for learners with noticing, consciousness-raising activities, and meaning-focused interaction (Ellis, 2003). The grammar-focused tasks have been identified into three tasks: (1) structure-based production tasks, (2) comprehension (interpretation) tasks, and (3) consciousness-raising tasks (CR). The current study adopted grammar consciousness-raising task (GCR) task as the main teaching framework. The GCR task requires learners to notice, analyze, and generate the rules of grammar from implicit grammar structure in a meaningful context. In the later, learners practice the use of grammar structure through production activities. The GCR task helps learners understand grammatical features and form explicit knowledge as consciousness by self-discovery rules and generalizations (Hinkel, 2016).

One of the changes in grammar teaching that supports the characteristic of the GCR task is 'discovery learning'. Lewis (1986) suggested that the learning, which comes from self-discovery, is more firmly fixed in mind than that from teacher explicit teaching. Discovery learning of grammatical features or explicit knowledge develops consciousness of grammar through learning. Apart from discovery learning in GCR task, there are many learning approaches and activities which support discovery learnings. One of those approaches is data-driven learning (DDL). DDL or corpus-based learning is one of the discovery learning approaches. It requires an active learning process such as exploring concordance (a listing of each occurrence of a word or pattern in a text or corpus), detecting patterns, forming hypothesizes and generating rules on their

own (Lewis, 1986 cited in Willis & Willis, 2011).

Johns and King (1991) suggested three steps to plan a DDL based lesson which is suggested to be blended with other approaches. (1) identification: learners need to expose the language to address the problem they are going to identify. (2) classification: they categorize the pattern of language. (3) generalization: they establish a pattern and formulate the rules from the discovered data. Nevertheless, the DDL application for logical connector teaching reveals suggestions for further development. DDL is found to be an advantage for long-term memory, but it seems not appropriate for low-proficiency learners. Accordingly, Johns and King (1991) suggested there should be a study on the method(s) which can be integrated with DDL (Johns & King, 1991 cited in Sah, 2015).

There are some studies of the integrated inductive approach between DDL and other teaching approaches. For example, Sah (2015) conducted a study comparing the two integrated inductive approaches: (1) DDL and Present-Practice-Produce (PPP) and (2) DDL and Illustration-Interaction-Induction (III). The results indicated that these teaching approaches were not significantly different. However, consciousness-raising activities in DDL with III made the integrated inductive approach more effective than DDL with PPP to some degree. The participants in the group of DDL with III approach could perform better in the delayed post-test. According to the results from this study, it can be claimed that the factor leading DDL successful is consciousness-raising activities in teaching grammar.

According to the recent development of grammar teaching, however, integrated inductive approaches in the study of Sah (2015) lacked communicative activities. To bridge the gap, the researcher proposed to conduct the study on investigating the effects of a teaching approach blended GCR task with DDL for logical connector teaching. The current study was the integrated inductive approach between the GCR task and DDL. The TBLT framework of Willis (1996) was adopted as the main framework of the study because it provided clear proposed task stages which could be blended with the basic steps of DDL. Along with Willis's task stages, the concept of the grammar focused task of Ellis (2003) was adopted to design the grammar task as in Table 1. The approach from the study was expected to increase the awareness and consciousness of grammar as learners could notice and construct rules for grammatical features. The results of the current study would contribute pedagogical implications to grammar teaching.

Table 1 An overview of the integrated inductive approach between the GCR task and DDL adapted from (Willis, 1996 ; Ellis, 2003)

<table>
<tr><th colspan="3">Pre-Task</th></tr>
<tr><td colspan="3">Teacher Role<br>-Explicitly introduce the logical connectors as the target structure of the lesson. (GCR + DDL)<br>-Provide the language input-printed concordance lines as the authentic samples of the logical connectors in context. (DDL)<br>-Introduce useful words, phrases, or expressions. (GCR)<br>-Ensure learners understand task outcomes. (GCR)<br>Student Role<br>-Note down useful words and phrases which they may encounter during the task. (GCR)</td></tr>
<tr><th colspan="3">Task Cycle</th></tr>
<tr><th>Task</th><th>Planning</th><th>Report</th></tr>
<tr><td>Student Role<br>- Analyze the concordance lines to identify the form, meaning, and use of the logical connectors in small groups. (GCR + DDL)</td><td>Student Role<br>- Prepare to report the class how they have done the task and what they have discovered. (GCR)</td><td>Student Role<br>- Present their spoken report in L2 to the class. Students can switch to L1 when they feel uncomfortable to use L2 to express complex ideas or when they need to respond to difficult issues. (GCR + DDL)</td></tr>
<tr><td>Teacher Role<br>- Act as a monitor and encourages students to use L2 in the discussion. (GCR)<br>- Allow students to switch to L1 when they feel uncomfortable to use L2 to express complex ideas. (GCR)</td><td>Teacher Role<br>- Ensure the purpose of the report is clear. (GCR)<br>- Act as a language adviser on task presentation, not the logical connectors. (GCR)<br>- Help students practice oral reports or organize written presentation. (GCR)</td><td>Teacher Role<br>- Act as a chairperson who gives brief feedback on presentation. (GCR)<br>- Select the points from each presentation which will contribute to the summary of the target logical connectors in the next stage. (GCR + DDL)</td></tr>
<tr><th colspan="3">Language focus</th></tr>
<tr><th colspan="2">Analysis</th><th>Practice</th></tr>
<tr><td colspan="2">Student Role<br>- Summarize form, meaning, and use of the target logical connectors. (GCR + DDL)<br>- Ask about other features they have noticed during the task phase such as vocabulary, collocation, grammatical structure. (GCR)</td><td>Teacher Role<br>- Conduct practice activities about the target logical connectors to build confidence. (GCR)<br>- Modify concordance lines to be material for a practice activity. (GCR + DDL)</td></tr>
</table>

Table 1 An overview of the integrated inductive approach between the GCR task and DDL adapted from (Willis, 1996 ; Ellis, 2003) (cont.)

| Teacher Role | Student Role |
|---|---|
| - Review the brief each presentation to the class. (GCR + DDL)<br>- Lead learners to notice language items from the report stage. (GCR + DDL)<br>- Brings other useful words, phrases, and patterns to learners' attention. (GCR + DDL) | - Practice the use of the target logical connectors. (GCR + DDL)<br>- Note down useful language items in language notebooks. (GCR) |

## Objectives

This study aimed to investigate the effects of the integrated inductive approach of the grammar-consciousness raising task (GCR task) with data-driven learning (DDL) in developing the knowledge of logical connectors of EFL learners and their attitudes towards learning logical connectors with the integrated inductive approach of GCR task with DDL.

## Methodology

### Participants

The current study was a quasi-experimental design. Sixty twelfth-grade students from two classes of a high school in Mahasarakham Province were selected by purposive random sampling as participants of the study. They were studying in the second semester of the academic year 2019. All participants were divided into two mixed abilities groups: 30 in an experimental group and 30 in a control group.

### Research Instruments

There were two research instruments for data collection in the study. The instruments included a logical connector test implemented as pre-test and post-test and a questionnaire.

The implementation of the experimental group was five lesson plans based on the integrated inductive approach of GCR task with DDL while the control group was implemented with five lesson based on the deductive teaching approach. The main content of each lesson plan covered two logical connectors, so there were totally ten logical connectors in the implementation. The logical connectors were selected from the results in the logical connector assessment form which required learners to assess their background knowledge on logical connectors. The effectiveness of the lesson plans was verified by three experts. The evaluation form for the lesson plans consisted of eleven items ranged in Likert scale: excellent, good, average, fair, and revision needed. The mean scores of each item were calculated ; the items scoring

higher than three were retained and lower than three were revised. One lesson plan represented each approach was implemented as the pilot study with students in another school. This was aimed to ascertain the effectiveness and identify the problems for the lesson plan revision.

The logical connector test was used to measure the logical connector knowledge of the control and the experimental groups before and after the implementation as a pre-test and a post-test. The test was aimed at evaluating the logical connector knowledge in terms of form, meaning, and use. The test was divided into two sections: receptive section and productive section with 30 items. The objectivity and validity of the test items were evaluated by three experts on the objectives of the test and how the test takers comprehend the test items. The Index of Item-Objective Congruence (IOC) was calculated ; the items scoring higher than 0.67 were retained and lower than 0.33 were revised. The pilot study was conducted with students in another school to ascertain the effectiveness of the test.

The questionnaire to explore the attitudes toward the integrated inductive approach of learners in the experimental group was constructed. There were 15 items written in Thai in the questionnaire. The quality of the questionnaire was evaluated by three experts on the objective of the statements and how the respondents understand the statements. Then, the Index of IOC was calculated ; the statements scored higher than 0.67 were retained and lower than 0.33 were revised. The pilot study was conducted with 30 students in another school.

## Procedures

The study covered one semester of the academic year 2019 lasting two months from February to March 2020. This study was a mixed-method research which collected quantitative data from the test and the questionnaire. The research procedures were as follows.

1. Before the first lesson begins, the logical connector test was implemented as a pre-test in both control group and the experimental group to measure the participants' logical connector knowledge before the implementation.

2. Five lesson plans of the integrated inductive approach of the GCR task and DDL were used with the experimental group. The control group was implemented with the lesson plans of deductive grammar teaching.

3. The logical connector test was applied as a post-test to investigate the effectiveness of two teaching approaches after completing the implementation.

4. The questionnaire was applied to the experimental group after all lessons were implemented to investigate their attitudes towards the integrated inductive approach of the GCR task and DDL.

5. The data collected from the logical connector pre-test and post-test were analyzed using independent t-test and paired t-test statistics. The data collected from the questionnaire was analyzed by descriptive statistics.

## Results

The results of the study are divided into two sections following the research questions 1) What are the effects of the integrated inductive approach of the GCR task with DDL on logical connector knowledge of EFL learners? and 2) What are learners' attitudes toward the integrated inductive approach of the GCR task with DDL in learning logical connector?

### 1. Logical connector knowledge of EFL learners

To investigate the changes (if there was any) in the control group which were implemented with the deductive approach, a paired t-test was used to compare the results from pre-test and post-test scores. The results are presented in the Table 2 below.

Table 2 Comparison of the control group and experimental group on pre-test and post-test scores (Paired t-test)

| Group | Test | Mean | Mean different | Sig. |
|---|---|---|---|---|
| Control Group (N=30) | Pre-test | 9.70 | 5.26 | .000 |
| Control Group (N=30) | Post-test | 14.97 | | |
| Experimental Group (N=30) | Pre-test | 9.57 | 8.26 | .000 |
| Experimental Group (N=30) | Post-test | 17.83 | | |

From the Table 2, it indicated that the control group made progress during deductive grammar teaching. The mean score of this group on pre-test and post-test scores was 9.70 and 14.97 respectively. The difference of mean score between post-test and pre-test scores was 5.26. The p-value was smaller than 0.001 ($p=0.00 < p=0.05$). Thus, it could be concluded that the control group made progress compared with the outset of the study.

Similarly, the experimental group made significant progress at the end of the implementation. According to the mean difference of the experimental group, it presented a substantial change in the experimental group. The mean score of this group was 9.57 before the implementation and 17.83 at the end of the implementation. The difference of mean score between post-test and pre-test scores was 8.27. According to the significant level of $p=0.00 < p=0.05$, this indicated that the experimental group made significant progress.

To investigate the different effects of two teaching approach, post-test scores of the experimental group and control group were compared with independent t-test. The results are presented in the Table 3 below.

Table 3 Comparison of the experimental group and the control group on post-test scores (Independent t-test)

| Group | Test | Mean | Mean difference | Std. Deviation | Sig. (2 tailed) |
|---|---|---|---|---|---|
| Experimental Group (N=30) | Post-test | 17.83 | 2.86 | 3.668 | .000 |
| Control Group (N=30) | Post-test | 14.97 | | 2.953 | |

According to the results in the Table 3, the mean score of the control group on the post-test was 14.97 while the experimental group was 17.83. The mean difference between the two groups was 2.86. Since the p-value was 0.00 < p=0.05, it could be concluded that the experimental group developed their logical connector knowledge significantly different from the control group on the post-test. The students in the experimental group commented that discovering and constructing the logical connector rules through the integrated inductive approach brought them understanding and awareness in using logical connectors in writing. The interaction from peers and teachers along with feedbacks from presentation helped them to achieve in learning logical connectors with the integrated inductive approach.

2. Learners' attitudes toward the integrated inductive approach of GCR task with DDL

To investigate learners' attitudes toward the integrated inductive approach of GCR task with DDL in learning logical connector, the results from the questionnaire were analyzed by descriptive statistics. The finding from the questionnaire is presented in Table 4.

Table 4 Results from the questionnaire of learners' attitudes toward the integrated inductive approach of GCR task with DDL in learning logical connector (1=the least, 2=less, 3=moderate, 4=more, and 5=the most)

| No. | Statement | Level of opinion x (N=30) | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1. | The pre-lesson session is helpful to learn with the integrated inductive approach. | 0 | 0.03 | 0.06 | 0.5 | 0.4 |
| 2. | The steps of the task are easy to follow. Task's steps are not too complicated. | 0 | 0.06 | 0.26 | 0.36 | 0.3 |
| 3. | The teacher's facilitation is useful for doing the task. | 0 | 0 | 0.16 | 0.13 | 0.7 |
| 4. | The interaction among group members is helpful for task achievement. | 0 | 0.03 | 0.03 | 0.13 | 0.8 |
| 5. | The task-presentation feedbacks help me to construct my own rules. | 0 | 0.03 | 0.13 | 0.33 | 0.5 |
| 6. | The concordance lines as a material in the lesson are useful examples of logical connector learning. | 0 | 0 | 0.26 | 0.4 | 0.33 |
| 7. | The contexts where the logical connectors appear in the concordance lines help me to identify the form, meaning, and use of the logical connectors. | 0 | 0 | 0.16 | 0.36 | 0.46 |
| 8. | Learning logical connectors through the integrated inductive approach makes the lesson more interesting and challenging. | 0 | 0 | 0 | 0.23 | 0.76 |
| 9. | The integrated inductive approach allows me to speak English more during task processes. | 0 | 0.1 | 0.26 | 0.4 | 0.23 |
| 10. | The integrated inductive approach allows me to participate in the lesson more than the previous grammar class. | 0 | 0 | 0 | 0.4 | 0.6 |

Table 4 Results from the questionnaire of learners' attitudes toward the integrated inductive approach of GCR task with DDL in learning logical connector (cont.)

| No. | Statement | Level of opinion x (N=30) | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 11. | Discovering and constructing the logical connector rules through the integrated inductive approach have increased understanding and awareness in logical connectors. | 0 | 0.03 | 0.06 | 0.16 | 0.73 |
| 12. | I feel more confident in using logical connectors after learning with the integrated inductive approach. | 0 | 0 | 0.06 | 0.3 | 0.63 |
| 13. | I prefer learning grammar with the integrated inductive approach to traditional teaching. | 0 | 0 | 0.1 | 0.4 | 0.5 |
| 14. | If I had studied with this approach earlier, my logical connector knowledge would have been better. | 0 | 0 | 0 | 0.36 | 0.63 |
| 15. | I want to study other grammar rules with this approach in the future. | 0 | 0.03 | 0.13 | 0.26 | 0.56 |

The results of the questionnaire shown in the Table 4 indicated that over eighty percent of participants in the experimental group responded to the level of 'more' and 'the most' in all items. This indicated that most participants had positive attitudes toward learning logical connectors through the integrated inductive approach. However, a few participants who responded in the level of 'less' might have difficulties in learning with the integrated inductive approach. This point is going to be raised in the discussion section.

To categorize each item in a group, statements 1 to 5 were mainly focused on the interaction patterns among students, peers, and teacher during the task. These statements aimed to investigate whether the interactions in the task helped students achieve the task and learning objectives. The results revealed that the pre-lesson session in the pre-task phase was helpful to learn with the integrated inductive approach. More than half of the participants agreed that the teacher's activities (e.g. vocabulary introduction and the target grammar point introduction) and facilitation during the task were helpful for achieving the task. Moreover, working in groups, interacting with peers led an individual to discover and generalize their own discovered rules. The feedback from the class presentation helped them correct and finalize the correct understanding of the logical connectors. This point is going to be discussed with supported theories in the next section.

The statements 6 and 7 were focused on the material from the corpus-printed concordance lines. The participants mostly agreed that the printed concordance lines were useful material to identify the form, meaning, and use of the logical connectors. This might be resulted from the adaptation from the previous studies suggested that original concordance lines be difficult for a low or mixed ability group of learners. This point is going to be clarified in the section of the discussion as well.

The statements 8 to 11 aimed to investigate participants' opinions toward the integrated inductive approach in the ways of encouraging second language communication and a student-center classroom. Almost all participants in the experimental group agreed that the integrated inductive approach made the lesson more interesting and challenging by discovering and constructing the logical connector rules by themselves. The lesson made them understand the use of logical connectors more correctly and appropriately. They also had a major part in the lesson which allowed them to communicate in L2 more than the previous grammar classes.

The statements 12 to 15 were designed to discover participants' overall impression of the integrated inductive approach. More than ninety percent of them felt more confident in using logical connectors after learning with the integrated inductive approach. In the future, besides learning logical connectors, the participants preferred learning other grammar rules with the integrated inductive approach than traditional grammar teaching.

## Discussion

According to the results of the study, it can be concluded that the students implemented with the integrated inductive approach of the GCR task and DDL had significantly developed their logical connector knowledge. The development of students' logical connector knowledge can be discussed based on the purposes of the study as follows.

### 1. The effects of the integrated inductive approach of GCR task with DDL in developing the knowledge of logical connectors of EFL learners

The results from the pre-test and post-test scores indicated that students learning with the integrated inductive approach of the GCR task and DDL had significantly higher scores of logical connector knowledge test than the group learning with the deductive approach. This means that the consciousness-raising activities in the integrated inductive approach outperform the practicing activities in the deductive approach. This result supported the study of Sah (2015) who conducted a comparative study between two grammar teaching approaches for teaching discourse markers (DDL+PPP and DDL+III). The two grammar teaching approaches also

represented a practicing activity and a consciousness-raising activity respectively. Though the practicing activity (DDL+PPP) was expected to be more effective than the consciousness-raising activity (DDL+III), the results of the study revealed that the consciousness-raising activity in DDL+GCR was more effective than the practicing one in DDL+PPP. Thus, the results of the current study also supported the previous study of Sah (2015).

The results of the post-test scores indicated that the integration of DDL into other teaching approaches made it effective and applicable for various groups of learners. According to the suggestion of Johns (2012) who proposed the DDL approach, basic steps of DDL should be blended or modified to make it effective for a particular group of learners. Moreover, Dankittikul and Laohawiriyanon (2018) also suggested blending DDL with other teaching approaches. Hence, the current study designed the integrated inductive approach blending DDL into the GCR task to investigate how DDL could be applied into various contexts. The results from the post-test scores indicated that the integrated inductive approach of DDL integrated with the GCR task was more effective than the deductive approach.

The integrated inductive approach on the GCR task and DDL brought more than logical connector understanding. There were several factors leading the integrated inductive approach to be more effective than the deductive approach. The task in the integrated learning approach required a complex cognitive process than the passive learning process in the deductive approach. As in the stage of the task cycle, students identified, analyzed, and summarized the forms, meanings, and uses of logical connectors from the concordance lines. Students identified the form and pattern of the logical connectors by noticing their features in the input they expose to. Then they used a strategy of input processing to link grammatical forms to their meanings and functions. Finally, they inductively constructed the usage of language structures or words and formulate the rules from the concordance data. This cognitive process in the integrated inductive approach could contribute to not only understanding of the logical connectors rules but also consciousness in using the logical connectors.

Another factor contributing to the success of the integrated inductive approach was the material used in the lesson. According to the results of the questionnaire the statements 6 and 7, students agreed that many concordance lines were helpful for logical connector learning. It helped them notice, analyze, and generalize grammar rules. This could be supported by the input hypothesis along with the natural order of Oller and Krashen (1988). It was claimed that the frequency of input helps learners

process the target language. The students were frequently exposed to samples of concordance lines to discover the target structure. The concordance lines illustrating the use of logical connectors selected from the corpus could be effective input leading to the success of the implementation.

Nevertheless, the major concern of this material was whether it was appropriate for low or mixed-proficiency learners as the data from the corpus was first effectively used with advanced learners. The concordance lines as material in grammar lessons might increase difficulties or distract students in achieving the lesson objectives. However, the concordance lines in the current study were carefully selected and simplified appropriately for the level of learners. Supported by the theory of textual enhancement of Oller & Krashen (1988) and the suggestion in the study of Dankittikul and Laohawiriyanon (2018), the data could be simplified and prepared in a printed version to be appropriate for learners' proficiency.

Besides the frequency and simplification of concordance lines leading to the success of the integrated inductive approach, the interactions of the teacher and peers also reduced the difficulties while the students perform the task. According to the questionnaire results of the statements 3 to 5, the role of the teacher as the facilitator who introduced difficult words in the pre-task phase and facilitated during the task helps perform the task. This session helped them prepare themselves and reduced difficulties they might encounter with learning material. Group discussion with peers encouraged second language (L2) communication and allowed them to share what they had discovered. Furthermore, class presentation was a platform where each group shared their points which helped the class summarize the final rule easier. This feature of the integrated inductive approach can be supported the feature in a task that led the task to succeed. The featured was defined by Prabhu (1987) that task was a piece of classroom work involving process and interactions among learners, peers, and learning materials that encourage learners to comprehend, manipulate, and produce language to achieve a task's goal. Thus, interactions during the task made learning grammar with DDL more flexible and supported the achievement in learning the logical connectors with this integrated inductive approach.

Moreover, the integration of the GCR task and DDL created a new dimension of learning grammar to each approach. The GCR task changed the characteristic of discovery learning in DDL. DDL required only one pattern of interaction (between learners and concordance lines) that students worked individually with the corpus data. This might be a critical issue for implementing DDL into classroom context with low or mixed-ability learners. However, according to the characteristics of the GCR task, it turned

the plain discovery learning of DDL to be more interesting. Working in a small group, discussing the grammar point, and using L2 in meaningful context contribute to the effective learning environment. Similarly, DDL also contributed the useful authentic material to the grammar discovery learning task. This useful material could be supported by the study of Uysal et al. (2013) indicated that the natural and rich quality of concordances from the corpus can serve as good supplementary materials in teaching grammar. Moreover, the corpus data was authentic examples of language by native speakers illustrating various use of a certain structure or item.

2. Learners' attitudes towards learning logical connectors with the integrated inductive approach of GCR task with DDL

The results from the questionnaire indicated that learners had positive attitudes toward learning logical connectors through the integrated inductive framework. The positive attitudes might be because of many factors as in the following discussion.

The questionnaire results revealed that students were satisfied with the discovery lesson using concordance lines as materials of the integrated inductive approach. They agreed that concordance lines help them understand the form, meaning, and use of the logical connector better from concordance samples. They felt more confident in using logical connectors after discovering the rules of logical connectors from concordance lines in the integrated inductive approach. This point of the results confirmed the previous study of Lin and Lee (2015) and Phoocharoensil (2012) which revealed that learners had positive attitudes toward learning grammar through concordance lines. However, a few students did not agree with this point. This might be due to difficulties and enormous efforts involved in the analysis of the concordance lines as in the results in the studies of Hunston (2002), Liu and Lei (2017), and Dankittikul and Laohawiriyanon (2018).

Moreover, students had positive attitudes toward the integrated inductive approach. Learners viewed the integrated inductive approach as an effective and trendy model for grammar learning. It facilitated the internalization of grammar involving discovery learning. Instead of the deductive approach, the students were also interested in learning other grammar rules with the integrated inductive approach in the future. This result supported the previous studies of Boontam and Phoocharoensil (2018) and Nugraha et al. (2017) which indicated that learning grammar with concordance lines was a trendy method. It was not only effective in terms of developing grammar consciousness and vocabulary knowledge, but it was also an effective and creative method for grammar teaching.

Interactions between the teacher and peers during the task brought positive

attitudes toward the integrated inductive approach. This point could be supported by the features of a task defined by Prabhu (1987) as mentioned in the previous discussion. These interactions made a normal DDL lesson more interesting. The pre-lesson session was helpful to learn with the integrated inductive approach. Then, the group discussion and feedback from the class presentation helped them correct and finalize the grammar rule. This result supported the previous study of Amirian and Sadeghi (2012) investigated the effectiveness and learners' perception toward the GCR task compared with traditional grammar teaching. The results indicated that learners taught with the GCR task significantly outperform the group taught with traditional grammar instruction.

Furthermore, students agreed that the integrated inductive approach improved their communicative skills. They also had a major part in the lesson which allowed them to communicate in L2 more than the previous grammar class. Nonetheless, a few students disagreed that the integrated inductive approach encouraged much second language communication because they were not forced to use the second language all the time. They could switch to L1 in the situation when they found it difficult to communicate in L2. This could be claimed with one of the GCR task's limitations by Ellis (2003). Ellis (2003) stated that as the goal of the task is grammar discovery in a meaningful context, learners should not be overly distracted by difficulties in terms of language proficiency. However, the class could reach the objective of the lesson discovering the rules for logical connectors.

However, a few participants who responded in the level of 'less' might have difficulties in learning with learning material. This indicated that the integrated inductive approach with corpus materials might not appropriate for their learning style and proficiency level. The first challenge of DDL for low-proficiency learners was that their learning style was not suited for DDL as in the studies of Hunston (2002) and Liu and Lei (2017). However, the current study reduced this limitation by group discussion, class presentation, and material simplification as the suggestion in the study of Dankittikul and Laohawiriyanon (2018).

## Conclusion

The current study aimed at investigating the effects of the integrated inductive approach of the GCR task with DDL in developing the logical connector knowledge of EFL learners and their attitudes toward learning through the integrated inductive approach. The results from the integrated inductive approach implementation revealed that students gained the development of their logical connector knowledge at the end of the implementation and had positive attitudes toward the integrated inductive approach. The significant

characteristics of the GCR task and DDL did not only enhance the feature of discovery learning but also motivate second language communication. In conclusion, this study contributed the new teaching approach for teaching and enhancing logical connector knowledge of EFL learners. This was a new dimension of grammar teaching. The future study, however, should consider the issues which may affect the results of the study such as the continuation and constraint of the learning period and the number of concordance lines. To study the effects of the integrated inductive approach in more details, there should be a study on a delayed post-test to investigate long-term memory and learning retention or other factors contributing to the achievement of the integrated inductive approach such as peers interaction, teachers' facilitation, additional activities, learning time, and online corpus query.

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