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The Effects of Deductive-Inductive Grammar Teaching on L2 Learning: Focusing on Three Different Inductive Modes

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This study examines the effectiveness of deductive and inductive grammar instruction on supporting Korean young students' learning of English comparative structure. In order to explore differential value of particular instructional modes, inductive strategy was subdivided into three different modalities: 1) Guided induction followed by students' rule verbalization, 2) Guided induction without rule verbalization, and 3) Subconscious induction on structured material. The effects of each approach were measured by analyzing the results from written test and oral test. Results from oral test revealed that each instructional mode had a significant impact on students' learning of target form yet no particular treatment obtained significant superiority over the other comparing mode. Data from written test, however, showed that two guided induction modalities were significantly superior to subconscious induction treatment in promoting participants' grammar learning. More beneficial role of guided inductive mode was discussed in terms of two main aspects; 1) it might promote students' active involvement in their learning process through guiding their induction, and 2) its efficacy might be connected with saliency of target form. The results of this study thus advocate the strength of guided inductive instructional mode, yet further research is required to search for a more refined, particular condition which could efficiently encourage students' reasoning process in relation to other potential variables.

[deductive-inductive grammar teaching/귀납적-연역적 문법지도]

I. INTRODUCTION

There has been a substantial body of research which examined the role of grammar instruction in L2 classrooms and many researchers in the SLA literature have accepted that SL instruction or some type of focus on form makes a positive difference in L2 learning

(Doughty & Williams, 1998; Ellis, 2002a; Norris & Ortega, 2000; Spada & Lightbown, 2008; Williams, 1999). Despite continuing controversial issues on grammar instruction, its necessity has been noticed by many researchers and practitioners based on theoretical and empirical studies. One of the reasons for greater attention to focus on form was the research findings derived form French immersion programs; it has been observed that students attained high level of comprehension competence yet still continued to show relatively low level of grammatical accuracy, even with fair amount of meaningful input over an extended period of time (Lightbown & Spada, 1990, 1994). This observation has led to the recognition that purely meaning-oriented instruction is not sufficient in terms of developing a high level of accuracy revealing the need for balancing fluency and accuracy in L2 learning. In addition, there have been a large number of studies demonstrating a beneficial role of grammar lesson in L2 learning. Norris and Ortega's (2000) meta-analysis of 49 studies revealed not only the overall effectiveness of grammar teaching over implicit instruction but also its relatively high durability. Ellis (2002a) also reviewed 11 studies that have investigated the effectiveness of form-focused instruction (FFI) on students' free production, and showed that FFI can have a significant impact on promoting the acquisition of implicit knowledge. According to N. Ellis (1995), FFI has a facilitative role in accelerating the rate of learning, and enhancing long-term accuracy and ultimate level of attainment, although it may not alter developmental sequences in language acquisition.

Despite the theoretical positions against grammar instruction viewing its effects as peripheral, fragile, and thus limited in L2 learners' interlanguage development (Krashen, 1993), much research has focused on the question of "how best to teach grammar" involving a number of pedagogical options beyond the issue of whether we should teach grammar. Along with the diverse approaches and methods to grammar instruction, the question concerning when and how to present the grammatical rules or regulations has been investigated by comparing the effects of the two instructional modes: the deductive (rule-driven) and inductive (rule-discovery) approach. Yet it has been pointed out that inductive/deductive approach to grammar instruction is an underresearched area in the second/foreign language classrooms despite its strong theoretical foundation (Erlam, 2003; Haight, Herron & Cole, 2007; Vogel, Herron, Cole & York, 2011). Besides, previous studies have yielded contradictory results about the effects of these instructional approaches (Erlam, 2003; Haight et al., 2007; Herron & Tomasello, 1992; Robinson, 1996; Rosa & O'Neil, 1999; Shaffer, 1989; Vogel et al., 2011). These mixed results have been attributed to the diversity of research contexts created by different participants, research designs, instructional treatments, and more importantly, to the differing formats of inductive approach itself applied in each study (Decoo, 1996; Erlam, 2003; Haight et al., 2007; Vogel et al., 2011). While it has been pointed out that subtypes of L2 instruction should be operationalized and investigated in a systematic manner (Norris & Ortega, 2000),

and that a variety of inductive strategies might contribute to the inconsistency observed in research findings, there seems to be little research investigating different types of inductive approach operationalized within a study.

Current study thus intends to compare the relative effectiveness of different formats of inductive approach, and of deductive approach referring to Decoo's (1996) refined subcategories of induction and deduction in the educational process. Brief summary of related research review is presented, and deductive and inductive conditions investigated in this study are further delineated in the following sections.

II. LITERATURE REVIEW

1. Defining Inductive and Deductive Approaches

Deduction is defined as the process that flows from the general to the specific, namely from formulated rules to the application in language use, while induction is the process moving from the specific to the general in which patterns and generalization will emerge from the actual language use (Decoo, 1996). In the former, the grammar rule is presented with the language learners so that they can apply it to the examples (Larsen-Freeman, 2001). Thus deductive mode consists of rule explanation by a teacher prior to students' practice session (Erlam, 2003). In inductive instruction, on the other hand, learners are first exposed to language samples, from which "they infer the rule or generalization" (Larsen-Freeman, 2001, p. 264), and derive an understanding of the underlying pattern (Thornbury, 1999). The inductive mode establishes conditions in which the learners discover the rules for themselves, and the students are required to discuss target grammar forms as a task content in the L2 (Ellis, 2002b), or they might discuss in the L1 (Oxford & Lee, 2007).

Debate on these two instructional modes have often been related to the issues concerning explicit and implicit instruction, which are generally discussed in line with the nature of human learning - explicit and implicit learning, and the nature of knowledge to be acquired - explicit and implicit knowledge. Learning is regarded as explicit or implicit when it takes place with or without conscious efforts to learn the structure of a stimulus domain, respectively (Robinson, 1997). Hulstijn (2005) pointed out that distinction between explicit and implicit L2 learning is roughly made through confirming whether it is processed with or without grammar rules underlying the input; whether an L2 instruction is explicit or implicit is determined depending on the provision of grammar rules. Namely, if the instructional treatment includes some attempts to direct students' attention on particular forms or to promote metalinguistic awareness, and provides rule explanation, it is considered explicit (DeKeyser, 1995). When a treatment avoids grammar rule presentation

or trials to direct learners' attention to language structure solely providing sufficient amount of comprehensible input, it is regarded as implicit (Ibid). In this aspect, both deductive and inductive learning are considered as explicit instruction since the correct rule is provided with learners at some point (Hulstijn, 2005). Norris and Ortega (2000) also categorized both deductive and inductive approach as explicit instruction as opposed to implicit instruction while differentiating them relying on the degree of explicitness; explicit instruction might be more explicit (deductive) or less explicit (inductive).

2. Diversity of Inductive Instructional Modes

Considering the fact that each approach can be placed in a continuum of explicitness, it seems natural to have diverse concepts or different interpretations on these two approaches, and researchers and theorists seem to have slightly different views, emphases and suggestions on defining each of them, particularly in the domain of induction. Whereas deductive approach tends to be commonly characterized by a teacher's rule explanation preceding language practice, varying formats of inductive techniques are identified in each study (Erlam, 2003; Haight et al., 2007; Vogel et al., 2011). Some researchers used an inductive strategy encouraging students' reasoning through asking students themselves to look for the rule or pattern from the language samples while excluding teacher's rule verbalization (Robinson, 1996; Rosa & O'Neill, 1999; Shaffer, 1989). Beyond the common aspect of these studies - rather explicit encouragement to find out the pattern from language input, Shaffer (1989) used more guided technique through requiring students to verbalize what they found. In other studies, induction was considered more learner-initiated process where students discover the pattern underlying the actual language use for themselves, thus they were not supported by explicit instruction to look for the rules or regularities (Abraham, 1985; Erlam 2003; Herron & Tomasello, 1992; Seliger, 1975). Even with similar presumptions about inductive learning found in above studies, there seems to be still a range of variation. Herron and Tomasello (1992) noted that any explanation or formation of target grammar rule was neither given by a teacher nor requested from students in their induction condition. However, they did promote students' inductive process in some way; students' attention was directed on the structure through oral practice drills of model sentences followed by sentence completion tasks. Erlam's (2003) study was similar in that it avoided explicit metalinguistic information or rule presentation about target structure yet students were encouraged to reason the abstract in a different way; they were given a series of tasks such as choosing a right sentence out of pairs and correcting errors, and they were required to explain the reasons about their choices while performing those tasks.

'How explicit the instruction or guide to students' inductive process is' might be one way

to look into varying forms of inductive strategies used in each study yet there still remain slightly different aspects which can be easily unnoticed; they might differ depending on whether the rule is presented by a teacher at the end of the lesson or not, when the reasoning process is promoted (e.g. during presentation, after presentation, during practice, after practice, or repeatedly in each stage), and whether the instruction focuses on written or oral mode. All these dissimilar manipulations as well as inductive conditions differently operationalized in each study might have a substantial impact on the overall research condition, and in reality, inconsistency is observed in the research findings. Erlam (2003), Robinson (1996), and Seliger (1975) obtained the results in favor of deductive approach, whereas superiority of inductive mode over deductive approach was confirmed in other studies (Haight et al., 2007; Herron & Tomasello, 1992; Vogel et al., 2011). According to Rosa and O'Neil (1999) and Shaffer (1989), there was no significant difference between these two approaches. Inconsistent results obtained from previous studies seem to be contradictory and confusing when trying to stand by either of them in the methodological opposition. Yet it becomes understandable if we take the view that both deduction and induction have their own place in the learning process (Fischer, 1979), and that they might work together with differing degree or portion rather than being exclusive (Littlewood, 1975). Direction for further research then might be concentrating on potential value or strength of particular format of each approach instead of simply comparing two approaches. As noticed by the earlier reviews, inductive learning condition particularly needs to be clearly specified since it might take diverse forms depending on how it is conceptualized or which pedagogical options are chosen while implementing it.

Decoo (1996) earlier noticed the need to identify more refined modes beyond the traditional dichotomy of induction and deduction, and introduced five different modalities. Based on his refinement, modality A is the Actual deduction where the explicit explanation of grammar rules is presented, and then students are encouraged to apply those rules or patterns. In modality B (Conscious induction as guided discovery), students are first exposed to language samples from which conscious discovery process is guided by the teacher so that students can infer or formulate the rule. Modality C (Induction leading to an explicit "summary of behavior") assumes that grammar rule is induced and internalized in a certain way through intense practice, which is quite close to behavioristic language learning mode. This practice session is followed by teacher's explicit summary of the rules or patterns. In modality D ("Subconscious" induction on structural material), induction is seen as a subconscious process, thus the grammar rule does not need to be explicitly stated. Students are left to this subconscious induction yet their learning process is supported by language material which has been "structured" in some way: the systematic repetition of the same pattern, graded variations, drill and practice. Modality E ("Subconscious" induction on unstructured material) is more like natural acquisition solely depending on

language practice based on authentic input without linguistic manipulation or instructional support.

3. Grammar Instruction in Korean EFL Elementary Classrooms

As W. K. Ho (2004) pointed out that Communicative Language Teaching (CLT) has become a dominant model since the 1980s in the countries of East Asia, Communicative Approach has had a great impact on English education in Korea since 5th revision to national curriculum which is considered the introduction of CLT. Its influence as a national standard is observed in the fact that diverse versions of authorized English textbooks adopt a similar textbook composition which is mainly communicative and meaning-oriented. Under this strong communicative framework, the absence of grammar instruction is found in many of elementary English classrooms. H. J. Lee (2005) points out that the position of form-oriented activities tends to be weakened under the extreme view of CLT, and the exclusion of grammar teaching and error correction is equated with CLT. According to Thompson (1996), misconceptions about CLT make it difficult for teachers to identify the useful innovations that CLT has brought. He, particularly, indicates that "the exclusion of explicit attention to grammar was never a necessary part of CLT" (p. 10), although there was a reaction against the heavy emphasis on structure at the expense of natural communication. As reviewing the current status of grammar instruction in elementary schools in Korea, Y. D. Kim, M. G. Do, E. J. Choi and J. S. Son (2005) argue that CLT has evolved into emphasizing accuracy as well as fluency of language use yet current English curriculum failed to embrace this change. They continue that many of English textbooks still rely on the initial version of CLT, and this tendency is also found in many teachers' perception on grammar teaching.

This type of communicative framework negating or downplaying the importance of grammar teaching might cause more serious problems especially in EFL settings. This is evident in that sufficient amount of subsequent input is a prerequisite for proving the benefits of implicit, meaning-based instructional approach yet many EFL learners are exposed to only limited opportunities to target language input and interaction (Fotos, 1998). She further notes that communicative use of target language might be quite low inside the classroom as well as outside the classroom. Currently, many researchers and teachers in Korea have argued not only certain type of focus on form might be essential in order to help our students with limited language exposure explore how the language works in its actual use, but instructional approaches and teaching practices suitable for Korean EFL context need to be developed (S. J. Kim, 2004; Y. H. Kim, 2011; J. H. Ko & J. K. Park, 2009; G. J. Koo & D. K. Kim, 2009; H. S. Lee & S. H. Choi, 2007).

Given this perceived necessity to grammar instruction, some teachers conducted

classroom-based research investigating the effects of inductive and deductive instructional modes in Korean EFL context. S. K. Jeong (2008) compared these two methods in terms of facilitating the acquisition of auxiliary verb, tense, agreement, and word order targeting 6th graders in an elementary school. Two classes were selected and assigned as inductive and deductive group, and each group was subdivided into high-level, medium-level, and low-level group based on the preliminary test score. Results of grammaticality judgement test showed that inductive group significantly outperformed deductive group in terms of the rate of improvement throughout pre-test, post-test, and delayed post-test. This was confirmed at the participants' learning of auxiliary verb, agreement and word order as well as their average score including four target structures. This significant superiority of inductive group was also identified in the medium-level, and low-level group yet there was no significant difference among high-level subgroups. D. G. Jung's study (2004) was quite similar with S. K. Jeong's (2008) in that it targeted 6th graders in an elementary school, and each inductive and deductive group was divided into three different subgroups - high-level, medium-level, and low-level group based on the pretest results. Unlike S. K. Jeong's (2008) study, there was no significant difference between inductive and deductive group in the average mean score of post-test. Yet, both inductive medium-level and low-level group significantly performed better than each respective subgroup of deductive group in the written test as identified in S. K. Jeong's (2008). Y. I. Lee (2007) explored the effects of inductive and deductive modes on high school students' acquisition of the subjunctive mood. Results indicated that both inductive and deductive instruction revealed a positive effect on the acquisition of target structure yet there was no significant difference between these two modes. Delayed post-test, however, demonstrated that deductive group retained what they learned better than inductive group, and this difference was statistically significant suggesting superior effects of deductive mode in promoting longer-term, implicit learning. K. J. Kim (2010) compared these two modes focusing on the middle school students' learning of the present perfect tense. She obtained significant superiority of inductive approach over deductive mode in the overall mean score of post-test and the same result was confirmed in both high-level groups and low-level groups. Yet the results of delayed post-test revealed that deductive high-level group significantly outperformed inductive high-level group while there was no significant difference between low-level groups of each group. It is noticeable that more positive effects of inductive approach were found in an elementary level and its benefits were more evident in the medium-level and low-level groups. In the studies targeting secondary school students, mixed results were obtained yet deductive approach was commonly more effective than inductive mode in terms of learning persistency.

4. The present study

Decoo (1996) stressed that "each modality could be further refined in complex and dynamic subcategories, while some other combinations could be added" (p. 96). Supported by research findings which were more favorable to inductive mode in elementary English classrooms, the current study investigated the relative effects of each approach attending to particular instructional modes of inductive techniques based on Decoo's subcategories: Modality 1 (Actual deduction), Modality 2 (Conscious induction as guided discovery), and Modality 3 ("Subconscious" induction on structural material). Modality 2 was subdivided into two modes to search for a specific guided inductive condition appropriate for target learners - Modality 2-① (Conscious induction as guided discovery followed by students' rule verbalization) and Modality 2-② (Conscious induction as guided discovery without rule verbalization) Among Decoo's subcategories, the study excluded Modality C which is based on the intense language practice followed by teacher's rule summary since it lacks instructional treatment encouraging students' inductive learning process. As being close to natural acquisition condition, Modality E was also excluded for this study.

Based on the literature reviewed above, the following research questions were explored:

1) Will each of instructional treatment have positive effects on Korean EFL elementary school students' acquisition of comparative sentence structure?
2) Will each of instructional treatment have differential impacts on Korean EFL elementary school students' acquisition of comparative sentence structure?

TABLE 1
Modalities of Inductive-Deductive Educational Process Investigated in the Study

Decoo's (1996) refinement of inductive/deductive educational process	Modality A Actual deduction Modality B Conscious induction as guided discovery Modality C Induction leading to an explicit "summary of behavior" Modality D "Subconscious" induction on structural material Modality E "Subconscious" induction on unstructured material
Modalities investigated in the study	Modality 1 Actual deduction Modality 2-① Conscious induction as guided discovery followed by students' rule verbalization Modality 2-② Conscious induction as guided discovery without rule verbalization Modality 3 "Subconscious" induction on structural material

III. METHODOLOGY

1. Participants and Setting

Four different classes were selected for the current study in an elementary school, and the subjects were 6th graders (13-year-old students) who agreed to participate in this research. Out of 62 volunteers, data of only 55 students were used for further statistical analyses who were present during all the instructional sessions and took both the pretest and the immediate post-test. Because of class organization based on the standardization policy, there was little difference in terms of the average of students' overall learning ability. Yet there was the need to identify a reasonable uniformity of each group since it consists of the students who were willing to participate in the study. A one-way analysis of variance (ANOVA) demonstrated that there was no significant difference among all the participating groups suggesting that they were reasonably comparable from the outset for both the written test ($p= .576$) and the oral test ($p= .152$).

Students have been taught under the national curriculum based on the communicative approach; the curricular textbook is designed to enhance students' basic communicative competence focusing on improving their listening and speaking ability. Thus language structure or grammatical point is not dealt with in an explicit way in many elementary English classrooms, although choral repetitions or practice drills tend to be adopted by teachers.

All the instructional treatments and tests were conducted during participants' regular class hours. Classes selected were randomly assigned to each deductive and inductive group - group #1 (Modality 1: Actual deduction), group #2 (Modality 2-①: Conscious induction as guided discovery followed by students' rule verbalization), group #3 (Modality 2-②: Conscious induction as guided discovery without rule verbalization), and group #4 (Modality 3: "Subconscious" induction on structural material).

2. Target Structure

English Comparative construction was selected as a target structure. Students were already exposed to sentences including comparative forms through regular classes through their curricular textbook. They were given dialogues involving many of comparative forms and meaning-based activities with the forms embedded in such as picture description tasks and survey prior to this research. Yet performance-based test administered by the school showed that students had difficulty in using comparative structure. They could easily produce sentences which were contained in the textbook dialogue and were repeatedly

practiced by oral drills such as "I am stronger than you.", "He is faster than you." However, many students had problems in making their own sentences when they were required to compare two objects or persons. This observation led to the assumption that "I am stronger than you" produced by them could be a prefabricated utterance rather than the result of the actual learning of target structure. Frequent exposure to target structure or meaning-based instruction might contribute to improving the salience of target grammar feature in the subsequent language input. Yet it might be insufficient to help them combine or form it as a coherent whole towards structural understanding of how to use it. It could thus be claimed that some type of explicit instruction might be beneficial for enhancing students' noticing and understanding on comparative structure.

Table 2 shows the type and number of the errors confirmed in the oral pretest, and 'use of positive degree' occupied most of them. It is noticeable that while many students used positive degree instead of comparative form when comparing two people or objects, they remembered to use 'than'. Errors such as 'beautifuler' or 'more strong' suggest that they were conscious of the need to change a given adjective with '-er' or 'more'. Yet those errors also revealed that more specific guide or explicit treatment might help students understand how to form comparative structure including differential ways to change given adjectives.

TABLE 2
Type and Number of Errors Confirmed in Oral Pre-test

Error type	Number	Percentage
Omission of than	70	12.61
Use of positive degree	349	62.88
Wrong use of -er (e.g. beautifuler)	75	13.51
Wrong use of more (e.g. more strong)	37	6.66
Others	24	4.32
Total	555	100

3. Instructional Treatments

Equal amount of instruction was provided with all the participating groups; they received three sessions of classes over a two-week period from the same instructor who was the researcher, and each lesson consisted of 40 minutes of duration. The whole lesson composition for each group was grounded on the same sequence - 1) comprehension task based on contextualized input, 2) listening task designed to enhance learners' noticing on the target grammar, 3) controlled oral practice, 4) grammar instruction which was differently arranged for four experimental conditions: Modality 1 (Actual deduction), Modality 2-① (Conscious induction as guided discovery followed by students' rule

verbalization), Modality 2-② (Conscious induction as guided discovery without rule verbalization), Modality 3 ("Subconscious" induction on structural material) and 5) communicative task. Overall lesson sequence was thus under inductive framework, within which specific types of grammar learning modes were investigated.

Comprehension task based on contextualized input intended to provide students with focused examples of target structure in the communicative input so that they can notice form-meaning relationship. Students were given a conversation which was manipulated to include many of comparative forms, and they were asked to answer comprehension-based questions. Following this stage, the same conversation was replayed with the script displayed through PowerPoint presentation. Given the script in which each comparative form was omitted, students were required to fill in the gaps while listening to the conversation. This listening task was aimed at drawing learners' attention to the target grammar feature while processing the input, and also promoting their awareness on the form in the subsequent language exposure.

For the controlled oral practice, many of PowerPoint slides including two pictures were given along with a question, “Who or Which is (more) --er?”. Students were asked to answer to the question using a comparative structure, and they received immediate feedback about their answer in both oral and written form. Namely, the right answer was shown by the presentation slide, and they repeated it chorally after the instructor. Yet there was the difference among the experimental groups in the manner of how it was presented; enhanced input using different color and bold stroke was adopted for Modality 2-①, Modality 2-②, and Modality 3 groups while no marking was used for Modality 1 group as shown in Figure 1.

FIGURE 1 Samples of PowerPoint Slide Used in Controlled Oral Practice

Controlled oral practice also included different patterns of inflections involved in making comparative forms such as 1) big**ger,** 2) happ**ier**, 3) large**r**, and 4) **more** beautiful. No explicit explanation about different inflection patterns was made during this stage yet input

enhancement was used as an implicit cue for the three inductive groups in the same way with Figure 1.

Following the three activities equally arranged for all the groups, target grammar point was dealt with in a particular way operationalized for each experimental group. Modality 1 (Actual deduction) group first received rule explanation by the instructor after the controlled oral practice. The instruction only focused on regular comparative form, and it was composed of three subparts: 1) when the form is necessary, 2) how the comparative structure is formed, and 3) what are the differential inflections of comparative forms (e.g. big**ger**, large**r,** happ**ier,** and **more** beautiful. Given the rules presented, students were encouraged to apply them through three types of practice activities: 1) fill in the blank, 2) choose a right sentence, and 3) make a sentence using a scrambled word. PowerPoint slides were used for the practice session, and the instructor elicited the answers from students who volunteered to share their own with the class members. Immediate feedback was given in both written and oral mode, and each practice activity was wrapped up with choral repetition after the instructor.

The instructional treatment for Modality 2-① and Modality 2-② was identical except the part of students' 'rule verbalization'. Both groups were provided with four different grammar tasks which look quite similar to practices used for deductive group - 1) fill in the blank, 2) choose a right sentence, 3) correct the errors, and 4) make a sentence using a scrambled word - yet without any rule explanation. Grammar tasks for these two inductive groups differed with deductive grammar practice in two aspects. Firstly, those tasks were performed as a pair work, thus students were asked to share what they thought alternating the turns. Secondly, modeled after Erlam's (2003) inductive strategy, students were required to explain the reasons about their performances to their partners while completing two grammar tasks - choose a right sentence and correct the errors. These inductive groups also received both written and oral feedback immediately after each task. At the end of each task, Modality 2-① group was guided to answer two main questions: 1) "Did you find out any common aspect in given sentences?", and 2) "Can you explain any pattern based on what you explored?", which was the only unequal treatment compared to Modality 2-②. This rule verbalization process for Modality 2-① group was firstly performed as a pair work and then students were encouraged to share what they discussed with the whole class. Yet they were not provided with teacher's modification or rule explanation. Modality 3 (Subconscious induction on structured material) group was not supported by grammar practices or tasks, and continued oral practices which was nearly equal to controlled oral practice instead. Yet this was a pair work which led the students to ask and answer with their partners based on given pictures. The pictures were sequenced in the format of distinguishing different inflections (e.g. small**er,** big**ger,** large**r**, happ**ier,** and **more** beautiful) and immediate feedback was given with the target form highlighted by

different colors and bold stroke. Unlike the other groups, Modality 3 group was presented with both PowerPoint presentation slides and worksheet while performing given tasks. Students also received immediate written feedback followed by choral repetition as did the other groups.

For the communicative task, each pair of students was given a piece of paper with an adjective written on it, and a blank paper. Students were then required to write two things to compare depending on the given adjective, and to ask and answer a question comparing the two things or people using the adjective. Students switched their papers with another pair when they were finished, and continued to perform the same activity.

4. Testing

1) Grammar pretest

Grammar pretest was implemented prior to instructional treatment in order to identify participants' initial understanding on the targeting feature and to evaluate whether each experimental condition has an effect on their learning through comparing its result with post-test data. Pretest data also functioned as a determiner to confirm whether all the experimental groups were reasonably comparable; it was decided by checking whether each group has approximately equal variances on the dependent variable. Participants' understanding on comparative structure was measured by administering both written test and oral test. Written test was set in the multiple-choice format, and it was composed of 15 questions including different inflections of comparative forms: 1) case of attaching only 'r' to the adjective ending with an 'e', 2) case of attaching the last consonant of given adjective and then adding 'er', 3) case of changing 'y' into 'i' and adding 'er' to the adjective, and 4) case of putting ‘more’ in front of the adjective. Possible score from written test was designed to range from 0 to 15. Oral test consisted of 10 different questions which required students to compare two people or objects based on pictures on the test sheet. Questions of each item were written in Korean to avoid the possibility that those questions might serve as a hint about the correct usage of target form and create test results different from students' actual status. Students were asked to specify two people or objects to be compared when making their own utterances in order to elicit full format of comparative sentence. Score range of oral test was from 0 to 10.

2) Grammar post-test

Participants were guided to complete grammar post-test after receiving three

instructional sessions. Grammar post-test was also composed of written test and oral test. Written test was administered immediately after the third session of class, while oral test was conducted on the day following the last instruction. Both written and oral test took the same format of grammar pretest.

IV. RESULTS AND DISCUSSION

1. Analysis of Pretest

In order to check homogeneity of variances in target grammar knowledge across all the experimental groups, Levene Statistic was conducted prior to further statistical analyses. The results showed that there was no significant difference among the groups in both written test (p= .641) and oral test (p= .545) indicating that they were approximately equal on the dependent variable from the outset. Equality of variances was also assessed by conducting a one-way ANOVA on the grammar pretest score, and each group did not significantly differ on both written test (p= .576) and oral test (p= .152). Preliminary analysis on the pretest score thus indicated that differences in post-test score could not be ascribed to the initial gaps of target grammar knowledge across the groups.

2. Analysis of Research Question 1: Will Each of Deductive and Inductive Instructional Treatment Have Positive Effects on Korean EFL Elementary School Students' Acquisition of Comparative Sentence Structure?

The effects of each instructional treatment were measured by checking the results of paired samples t-test. Table 3 shows that there was significant mean difference between pre-test and post-test in the oral test data of each modality.

TABLE 3
Descriptive Statistics and T-test Result of Oral Test

	N	Pretest		Post-test		t	Sig
		Mean	SD	Mean	SD		
Modality 1 group	14	4.21	2.99	7.64	2.23	-7.186	.000
Modality 2-① group	15	3.73	2.52	8.40	2.29	-7.236	.000
Modality 2-② group	13	6.07	2.36	8.84	1.28	-5.196	.000

Modality 3 group	13	4.84	3.13	7.30	2.17	-4.474	.001

This suggests that each deductive and inductive instructional mode investigated in this study had a positive impact on students' learning of comparative sentence structure, and this influence is statistically significant. According to written test results, significant mean difference between pre-test and post-test was found in Modality 1, Modality 2-①, and Modality 2-② as demonstrated in Table 4. Thus written test data propose that deductive treatment and guided inductive instruction with and without rule verbalization might promote students' learning of target structure. Yet students who were led to subconscious induction process by structured material did not show significant improvement when measured by written mode.

TABLE 4
Descriptive Statistics and T-test Result of Written Test

	N	Pretest		Post-test		t	Sig
		Mean	SD	Mean	SD		
Modality 1 group	14	7.50	3.63	12.92	2.99	-7.420	.000
Modality 2-① group	15	8.00	4.12	14.00	1.00	-6.243	.000
Modality 2-② group	13	9.38	4.07	13.69	.94	-3.916	.002
Modality 3 group	13	8.84	3.26	9.92	5.12	-.944	.364

3. Analysis of Research Question 2: Will Each of Deductive and Inductive Instructional Treatment Have Differential Impacts on Korean EFL Elementary School Students' Acquisition of Target Structure?

In order to evaluate differential effects of deductive and inductive instructional modes on the participants' learning of target grammar, a one-way ANOVA was run on the post-test data. All the statistical analyses were based on the significance level of .05 for rejecting the null hypotheses. Table 3 shows that all the experimental groups demonstrated some degree of progress in the oral use of target grammar, and Modality 2-① revealed greatest rate of improvement, followed by Modality 1 group, Modality 2-② group, and Modality 3 group. Yet there was no significant mean difference across the groups, and thus it was not identified whether a particular modality is more effective than the other in promoting students' oral use of comparative structure.

Based on the written test data, each group made an improvement, and Modality 2-① group again showed the highest rate of progress as compared with other groups. Unlike the oral test data, ANOVA F-statistic demonstrated that there was a significant difference (p= .003) across the groups on the written post-test data implying that there is a systematic relationship between differential instructional treatments and students' learning of comparative structure.

TABLE 5
One Way ANOVA Results of Written Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	139.125	3	46.375	5.180	.003*
Within Groups	456.621	51	8.953		
Total	595.745	54			

TABLE 6
Multiple Comparisons (Scheffe's Test) Results of Written Test

(I) Treat	(J) Treat	Mean Difference (I-J)	Std. Error	Sig.
Modality 1	Modality 2-①	-1.07143	1.11194	.818
	Modality 2-②	-.76374	1.15249	.932
	Modality 3	3.00549	1.15249	.092
Modality 2-①	Modality 1	1.07143	1.11194	.818
	Modality 2-②	.30769	1.13385	.995
	Modality 3	4.07692	1.13385	.009*
Modality 2-②	Modality 1	.76374	1.15249	.932
	Modality 2-①	-.30769	1.13385	.995
	Modality 3	3.76923	1.17364	.024*
Modality 3	Modality 1	-3.00549	1.15249	.092
	Modality 2-①	-4.07692	1.13385	.009*
	Modality 2-②	-3.76923	1.17364	.024*

Based on post hoc analysis (Scheffe's test), the significant difference was confirmed in between Modality 2-① group and Modality 3 group (p= .009), and Modality 2-② group and Modality 3 group (p= .024). Namely, Modality 2-① group and Modality 2-② group significantly outperformed Modality 3 group. Although Modality 2-① was the group that exhibited greatest growth, its superiority over Modality 2-② or Modality 1 group was not

statistically significant. Also, there was no significant difference between inductive groups and deductive group. Thus, written data suggested that Modality 2-① and Modality 2-② condition might be more effective than Modality 3 treatment in supporting students' learning of target form. In brief, differential effectiveness, namely a more beneficial role of Modality 2-① and Modality 2-② over Modality 3 was identified only in the written test data.

The fact that differential effects were confirmed only in written data might be in part attributed to the grammar feature the current study intended to focus on. Namely, instructional treatments included four different inflections of comparative form (e.g. big**ger**, large**r**, happ**ier**, and **more** beautiful) beyond how to form comparative structure, and students were also assessed on the acquisition of these features. It was easily judged whether students obtained the knowledge on differential inflections of comparative form through written test. Oral test data, on the other hand, could not present any sign of differential inflections, evidence of their learning on this part since students thinking of 'happier' or 'happyer' get to pronounce in the same way. Each item was considered to be correct when students produced a right form of comparative sentence structure with correct pronunciation. This might lead to the situation that students might get higher scores from the oral test than the written test regardless of their understanding of different inflections. Yet the differential effects identified only in written test data might not be explained for this reason. Students would have difficulty in noticing this difference only through oral practices, and, even with the provision of written form, students might easily overlook this feature which is relatively less salient. Furthermore, discovering the pattern involved in different inflections would be demanding although they could notice the difference. Modality 2-① and Modality 2-② conditions might be more helpful in that those conditions promoted students to actively explore the regulations through keeping asking what they thought. On the contrary, both Modality 1 and Modality 3 condition might not be sufficient in facilitating their learning process on this less salient feature.

It is noticeable that Modality 2-① group marked the greatest degree of improvement in both written test and oral test although its effectiveness was significant only in comparison with Modality 3 group. Experimental conditions of Modality 2-① and Modality 2-② were identical except that students were led to verbalize what they found through the instructor's guiding questions for Modality 2-① group. This implies that there is a possibility that rule verbalization process might have a differential impact on students' grammar learning. Inductive condition including students' rule verbalization can be considered more explicit in the degree of enhancing their awareness on language structure or of promoting their reasoning process than the inductive mode without the verbalization process. It thus seems worthwhile to conduct further research in exploring how to design inductive mode efficiently enhancing students' discovery or reasoning process, and in investigating the

relationship between the degree of explicitness within an inductive mode and students' grammar learning.

Although there was no significant mean difference between Modality 2 (Guided induction) groups and Modality 1 (Deduction) group, they differed in that only Modality 2 groups showed significant superiority over Modality 3 (Subconscious induction) group. Modality 1 and Modality 3 condition appear to be placed on the opposite positions within a continuum of explicitness yet they did not show statistically significant difference in supporting students' grammar learning. Modality 1 condition, however, had resemblance with the treatment of Modality 2 setting aside the clear distinction between them - rule explanation initiated by the instructor or rule discovery guided by the instructor's indirect support. In other words, grammar practices used for Modality 1 group and grammar tasks designed for Modality 2 groups were almost identical except the way they were implemented; the former was an individual learning activity as a rule application process, while the latter encouraged students to explain the reasons underlying their choices to their partners through a pair work. It seems noticeable that only Modality 2 groups showed significant effectiveness over Modality 3 group despite this similarity. Herron and Tomasello (1992) claimed that the key difference between inductive and deductive mode is not in whether grammar rule is presented by the teacher before or after the examples; they noted that this conceptualization could lead to the passivity on the part of the students. Guided inductive approach was advocated in their research in that it enables learners to take an active role through establishing the condition for them to form their own hypothesis on regularities underlying language samples and to discover how those patterns work by themselves. Vogel et al. (2011) also argued that students' active processing of and hypothesis testing on linguistic data is essential for L2 learning, and emphasized the strength of the guided inductive approach which requires students' active engagement in their learning process. In this aspect, more favorable result toward Modality 2 conditions needs to be noticed, particularly because it was obtained from the written data which actually assessed students' learning of less salient language feature - differential inflections involved in making comparative forms.

V. CONCLUSION

Prior to discussing the results and implications, limitations of this research framework need to be addressed. Since this quasi-experimental study lacks random selection and assignment of participants, it cannot be assumed that the groups compared are equal thus there might be pre-existing differences among the groups regardless of research treatment. In order to weaken threats to internal validity, the initial status of the subjects were checked

by analyzing the pre-test data. Generalizability of this study is also limited in that the instructional treatment focused on only one language structure targeting limited number of students: four classes of one elementary school. Despite these constrains, the study explored more refined modes of inductive strategy instead of simply comparing inductive mode with deductive instruction. Thus it might provide useful suggestions on how to search for a more specified instructional mode proper to particular students or learning context.

This study examined the effects of more refined deductive and inductive modalities beyond the traditional dichotomous opposition as viewing each approach of dealing with grammar rules within a continuum of explicitness. Results of oral test showed that four different modalities – grammar instruction based on 1) deduction, 2) guided induction with rule verbalization and 3) guided induction without rule verbalization, and 4) subconscious induction - had a significant effect on promoting students' learning of comparative sentence structure. Yet the written test data revealed that only deductive and guided inductive instructional treatment had a statically significant impact on the acquisition of target structure. In particular, two guided inductive modes were significantly superior to subconscious induction treatment in supporting students' L2 learning. The fact that differential effects of guided induction condition were found in only written test data might be attributed to two aspects of target structure the study focused on: comparative sentence structure and differential inflection patterns involved in making comparative forms. In other words, written test could actually assess the acquisition of different inflection patterns, which might be connected with more favorable results towards guided inductive treatment. This differential effect might be explained in relation to salience of target form; more explicit and guided inductive mode can be effective in enhancing learners' noticing and investigation on less salient language feature. Thus, it seems natural to explore benefits of each modality in connection with the nature of target form. This also implies that different aspects of a targeting form – whether it is syntactic (e.g., comparative sentence structure) or morphological (e.g., differential inflection patterns involved in making comparative forms) - need to be considered when examining the potential value of particular instructional mode. Further research is thus required to explore the relative effects of deductive/inductive grammar teaching in a close relation with particular characteristics of target form. Also, guided inductive strategies need to be further explored and diversified in order to search for a more efficient way to promote students' active reasoning process and to find out a proper condition appropriate for given educational context in connection with potential variables - learner with differing age or level, target grammar, educational setting, and test/measurement used in assessing students.

REFERENCES

Abraham, R. (1985). Field independence-dependence and the teaching of grammar. *TESOL Quarterly, 19*, 689-702.

Decoo, W. (1996). The induction-deduction opposition: Ambiguities and complexities of the didactic reality. *IRAL-International Review of Applied Linguistics in Language Teaching, 34*, 95-118.

DeKeyser, R. M. (1995). Learning second language grammar rules: An experiment with a miniature linguistic system. *Studies in Second Language Acquisition, 17*, 379-410.

Doughty, C., & Williams, J. (1998). *Focus on form in classroom second language acquisition*. Cambridge: Cambridge University Press.

Ellis, N. (1995). Consciousness in second language acquisition: A review of field studies and laboratory experiments. *Language Awareness, 4*(3), 123-146.

Ellis, R. (2002a). Does form-focused instruction affect the acquisition of implicit knowledge? A review of the research. *Studies in Second Language Acquisition, 24*, 223-236.

Ellis, R. (2002b). The place of grammar instruction in the second/foreign language curriculum. In E. Hinkel and S. Fotos (Eds.), *New perspectives on grammar teaching in second language classrooms* (pp.17-34). Mahwah, NJ: Erlbaum.

Erlam, R. (2003). The effects of deductive and inductive instruction on the acquisition of direct object pronouns in French as a second language. *Modern Language Journal, 87*, 242–260.

Fischer, R. A. (1979). The inductive-deductive controversy revisited. *The Modern Language Journal, 63*(3), 98-105.

Fotos, S. (1998). Shifting the focus from forms to form in the EFL classroom. *ELT Journal, 52*(4), 301-307.

Haight, C., Herron, C., & Cole, S. P. (2007). The effects of inductive and deductive instructional approaches on the learning of grammar in the elementary foreign language classroom. *Foreign Language Annals, 40,* 288-311.

Herron, C., & Tomasello, M. (1992). Acquiring grammar structures by guided induction. *The French Review*, *65,* 708-718.

Ho, W. K. (2004). English language teaching in East Asia today: An overview. *Asia Pacific Journal of Education, 22*(2), 1–22.

Hulstijn, J. H. (2005). Theoretical and empirical issues in the study of implicit and explicit second-language learning. *Studies in Second Language Acquisition*, *27*, 129-140.

Jeong, Soon-Kyu. (2008). *A comparative study on deductive and inductive methods of English grammar teaching in the elementary school*. Unpublished MA Dissertation, Chinju National University of Education, Chinju.

Jung, Doo-gyo. (2004). *A study on the effect of teaching grammar through inductive and deductive methods in an elementary school English teaching*. Unpublished MA Dissertation, Gongju National University of Education, Gongju.

Kim, Kyung Jin. (2010). *A comparative study on inductive grammar instruction and deductive grammar instruction in middle school English class*. Unpublished MA Dissertation, Ewha Womans University, Seoul.

Kim, Soo-jin. (2004). The effects of form-focused grammar activities on elementary school English learning. *Studies in English Education, 9*(2), 151-173.

Kim, Young Dae, Do, Myoung Gi, Choi, Eok Ju, & Son, Jung Seon. (2005). Current status of Korean elementary grammar teaching and the ways to improve its problems. *Chodeung Gyoyook Yeongu Nonchong, 21*(1), 347-364.

Kim, Young-Hyun. (2011). Techniques and activities for teaching grammar in the elementary English classroom. *Journal of Elementary Education Research, 26*(1), 1-17.

Ko, Ju-Hyun, & Park, Joo-Kyung. (2009). The effects of teaching grammar deductively upon the 4th graders' communicative competence. *Studies in English Education, 14*(1), 126-160.

Koo, Gwang-Jin, & Kim, Dong Koo. (2009). The effects of 'focus on form' instruction on elementary school students' English listening and reading proficiency. *English Language Teaching, 21*(3), 165-182.

Krashen, S. (1993). The effects of grammar teaching: Still peripheral. *TESOL Quarterly*, 27, 717-725.

Larsen-Freeman, D. (2001). Teaching grammar. In M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language* (pp.251-266). Boston: Heinle & Heinle.

Lee, Hee-Sook, & Choi, Sunhee. (2007). Focus on form approach through storytelling. *Primary English Education, 13*(3), 93-124.

Lee, Hwa-ja. (2005). A comparative study on the awareness of grammar instructional approach by EFL teachers and learners. *English Teaching, 60*(1), 69-96.

Lee, You-Im. (2007). *A comparative study on deductive grammar instruction and inductive grammar instruction in high school English class*. Unpublished MA Dissertation, Ewha Womans University, Seoul.

Lightbown, P. M., & Spada, N. (1990). Focus-on-form and corrective feedback in Communicative Language Teaching: Effects on second language acquisition. *Studies in Second Language Acquisition, 12*, 429-448.

Lightbown, P. M., & Spada, N. (1994). An innovative program for primary ESL students in Quebec. *TESOL Quarterly, 28*(3), 563-579.

Littlewood, W. T. (1975). Grammatical explanations. *Audio-Visual Language Journal*, *13*(2), 91-94.

Norris, J., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, *50*, 417-528.

Oxford, R. E., & Lee, K. R. (2007). L2 grammar strategies: The second Cinderella and beyond. In A. D. Cohen & E. Macaro (Eds.), *Language learner strategies*. (pp. 117-139). Oxford University Press: Oxford.

Robinson, P. (1996). Learning simple and complex second language rules under implicit, incidental, rule-search, and instructed conditions. *Studies in Second Language Acquisition, 18,* 27−77.

Robinson, P. (1997). Individual differences and the fundamental similarity of implicit and explicit adult second language learning. *Language learning, 47*(1). 45-99.

Rosa, E., & O'Neil, M. D. (1999). Explicitness, intake, and the issue of awareness: Another piece to the puzzle. *Studies in Second Language Acquisition*, *21,* 511-556.

Seliger, H. W. (1975). Inductive method and deductive method in language teaching: A re-examination. *IRAL-International Review of Applied Linguistics in Language Teaching, 13*, 1-18.

Shaffer, C. (1989). A comparison of inductive and deductive approaches to teaching foreign languages. *Modern Language Journal*, *73,* 395-403.

Spada, N., & Lightbown, P. (2008). Form Focused Instruction: Isolated or Integrated? *TESOL Quaterly, 42*(2), 181-207.

Thompson, G. (1996). Some misconceptions about Communicative Language Teaching. *ELT Journal, 50*(1), 9-15.

Thornbury, S. (1999). *How to teach grammar*. Harlow, England: Pearson Education.

Vogel, S., Herron, C., Cole, S. P., & York, H. (2011). Effectiveness of a guided inductive versus a deductive approach on the learning of grammar in the intermediate-level college French classroom. *Foreign Language Annals, 44*(2), 353-380.

Williams, J. (1999). Learner-generated attention to form. *Language Learner, 49*(4), 583-625.

APPENDIX

Grammar pretest (written form)

◈ 아래 문장을 잘 읽고, 빈 칸에 들어갈 알맞은 단어를 골라 번호를 쓰세요.

1. My house is _____ than Sam's.

① biger ② bigger ③ more big ④ bigest

2. This yellow pants _____ than the brown pants.

① expensive ② expensiver ③ more expensive ④ expensivest

3. The winter is _____ than the fall.

① colder ② cold ③ more cold ④ more colder

4. I am _____ now than before.
① more happy ② happyer ③ happier ④ happy
5. Susan is _____ than me.
① crazy ② crazyer ③ more crazy ④ crazier
6. This test is _____ than our final exam.
① difficulter ② more difficulter ③ more difficult ④ difficult
7. Airplanes are _____ than cars.
① more safe ② safeer ③ safer ④ safe
8. The summer is _____ than the winter
① hotter ② hoter ③ hot ④ more hot
9. My brother is _____ than me.
① taller ② more taller ③ more tall ④ tall
10. The beach is _____ than the park.
① more nice ② niceer ③ most nice ④ nicer
11. My hair is _____ than yours.
① long ② longger ③ longer ④ more long
12. David is _____ than his brother.
① wiser ② more wise ③ wiseer ④ more wiser
13. Mary is _____ than her mother.
① fat ② fater ③ more fat ④ fatter
14. My father is _____ than my mother.
① angrier ② angry ③ more angry ④ more angryer
15. She is _____ than this actress.
① more beautiful ② beautifuler ③ more beautifuler ④ beautiful

Examples in: English
Applicable Language: English
Applicable Levels: Elementary

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