DENİZ EMRE

THE EFFECTS OF INDUCTIVE AND DEDUCTIVE APPROACH ON WRITTEN OUTPUT

A MASTER'S THESIS

BY

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THE PROGRAM OF TEACHING ENGLISH AS A FOREIGN LANGUAGE
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Deniz Emre

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İHSAN DOĞRAMACI BILKENT UNIVERSITY

THE GRADUATE SCHOOL OF EDUCATION

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I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Teaching English as a Foreign Language.

Asst. Prof. Dr. Julie Mathews-Aydınlı (Supervisor)

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ABSTRACT

THE EFFECTS OF INDUCTIVE AND DEDUCTIVE APPROACH ON WRITTEN OUTPUT

Deniz Emre

M.A. Program of Teaching English as a Foreign Language

Supervisor: Asst. Prof. Dr. Julie Mathews-Aydınlı

June, 2015

The present study explored the effects of inductive grammar instruction and deductive grammar instruction on the acquisition of conditionals and relative clauses in three aspects: written production, i. e. grammar accuracy in writing tasks, grammar test scores and students' and the instructor's perspectives. The study was carried out with 38 intermediate level EFL (English as a Foreign Language) students. During a four-week period, one instructor taught grammar to two groups. In the inductive group, the students worked on consciousness-raising tasks to discover the meanings and rules of the target grammatical structures. Later, they received feedback from the instructor. In the deductive group, the instructor explained the meanings and the rules of the target grammatical structures directly.

The grammar pre and post-test scores did not reveal a statistically significant difference between the scores of the two groups. Furthermore, there was not a statistically significant difference between the writing tasks of the two groups in terms of grammar accuracy. The questionnaire administered in the inductive group

implied that the learners generally had positive perspectives on inductive learning. The interview conducted with the instructor revealed that she regarded inductive approach as a more interactive but less practical way of teaching. Nevertheless, she preferred inductive teaching on condition that the students were motivated and the target structures were new to them.

In light of these findings, teachers and material developers might consider involving both approaches in their practices and work in order to ensure variety.

Keywords: inductive grammar instruction, deductive grammar instruction, consciousness-raising task

ÖZET

TÜMEVARIM VE TÜMDENGELİM YAKLAŞIMLARININ YAZILI ÇIKTI ÜZERİNDEKİ ETKİSİ

Deniz Emre

Yüksek Lisans, Yabancı Dil Olarak İngilizce Öğretimi Bölümü

Tez Yöneticisi: Yrd. Doç. Dr. Julie Mathews-Aydınlı

Haziran, 2015

Mevcut çalışma tümevarım yoluyla dilbilgisi öğretimi ve tümdengelim yoluyla dilbilgisi öğretiminin koşul cümleleri ve sıfat cümleciklerinin edinimi üzerindeki etkilerini üç açıdan incelemektedir: yazılı üretim, diğer bir deyişle yazma ödevlerindeki dilbilgisi doğruluğu, dilbilgisi testlerindeki performans, ve öğrenciler ile okutmanın bakış açıları. Çalışma İngilizce'yi yabancı dil olarak öğrenen orta seviyedeki 38 öğrenci ile gerçekleştirilmiştir. Dört haftalık bir süreç içerisinde, aynı okutman iki gruba dilbilgisi öğretmiştir. Tümevarım grubundaki öğrenciler hedef dilbilgisi yapılarının anlamlarını ve kurallarını keşfetmek için öncelikle dilbilgisi bilinçlendirme görevleri üzerinde çalışmışlardır. Daha sonra, keşfettikleri kurallar konusunda okutmandan dönüt almışlardır. Tümdengelim grubunda okutman, hedef dilbilgisi yapılarının anlam ve kurallarını doğrudan açıklamıştır.

Dilbilgisi öntest ve sontest sonuçları iki grup arasında istatistiksel olarak anlamlı bir fark olmadığını ortaya çıkarmıştır. Ayrıca, iki grubun yazma ödevleri arasında da dilbilgisi doğruluğu açısından istatistiksel olarak anlamlı bir fark

bulunmamıştır. Tümavarım grubunda uygulanan anket öğrencilerin tümevarım yoluyla dilbilgisi öğrenimine karşı genel olarak olumlu bakış açıları olduğuna işaret etmiştir. Okutmanla yapılan görüşme, onun tümevarım yaklaşımını daha fazla etkileşimli ve fakat daha az uygulanabilir bir öğretim yolu olarak gördüğünü ortaya çıkarmıştır. Ancak, öğrencilerin motive olması ve hedef yapıların onlar için yeni olması koşuluyla tümevarım yoluyla öğretimi tercih etmiştir.

Bu bulgular göz önüne alındığında, öğretmenler ve materyal geliştiriciler uygulamalarında ve çalışmalarında iki yaklaşıma da yer vererek çeşitlilik sağlamayı düşünebilirler.

Anahtar Kelimeler: tümevarım yoluyla dilbilgisi öğretimi, tümdengelim yoluyla dilbilgisi öğretimi, dilbilgisi bilinçlendirme görevleri

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CHAPTER I - INTRODUCTION

Introduction

Grammar instruction is a key aspect of ELT (English Language Teaching). To date, various instructional approaches to teaching grammar have been proposed. One of these approaches is the inductive method, an instructional approach in which learners are expected to elicit the rule from samples that present a particular structure and "subconsciously learn it by recognizing the reoccurring patterns" (Chalipa, 2013, p. 76). The inductive approach is considered to be beneficial particularly with complex structures, which can be "difficult to articulate and internalize" (Larsen-Freeman, 2009, p. 528). Moreover, this approach shifts the role of the student from the passive receiver of information to the active participant of the learning process, compared to various approaches such as the deductive approach in which students directly receive the rules from teacher-fronted explanations.

Writing tasks such as paragraphs or essays can be demanding for language learners, especially in terms of using language structures correctly and appropriately. The effect of inductive instruction on grammar accuracy in written output has been a neglected topic in the literature. The inductive approach may have a positive effect on grammar use and accuracy in writing tasks, as it aims to lead learners to discover and internalize grammar rules. Therefore, it can raise their awareness, which might result in higher self-confidence in using these structures in writing tasks. The purpose of this study is to investigate whether inductive instruction has a positive effect on the grammar accuracy in written tasks and grammar tests and explore the learners' and teachers' perspectives on inductive grammar teaching.

Background of the Study

There has been an ongoing debate among scholars and teachers for decades on how to teach grammar. Various studies have been conducted in numerous settings to explore the effectiveness of an inductive approach compared to a deductive approach, which is generally considered to be the opposite of the former. Especially from the second half of the 20th century, the advantages of inductive approaches in EFL (English as a Foreign Language) and ESL (English as a Second Language) classes have been emphasized by many scholars and teachers around the world.

The deductive approach is defined as one in which the grammatical rule or pattern is explicitly stated at the beginning of the learning process and the students move into the applications of it (Decoo, 1996). Students are supplied with a rule which they then apply in a task that requires them to analyze data that illustrates its use (Ellis, 1997). In other words, the students are first introduced to the rules and then provided with practice of the target structure. This approach is teacher-centered and relies heavily on teacher-fronted explanations.

The inductive approach is an instructional approach to L2 grammar in which the language learners are subject to examples of the target language at the beginning of the lesson and formulate and generalize patterns and hypotheses at the end of the lesson by themselves (Kim, 2007). In other words, students are provided with data which illustrates the use of a grammatical structure which they analyze to generate rules (Ellis, 1997). Feedback is delivered by the teacher. This approach is student-centered and requires the learner to participate in the process of rule-discovery.

Both approaches are considered to be closely linked to instructional methods labeled as explicit and implicit. Explicit instruction in grammar teaching involves

teacher-fronted explicit explanations of rules and patterns; whereas implicit instruction refers to a technique in which grammar rules or patterns are not explicitly stated, but presented through text (Takimoto, 2008). In implicit instruction, tasks do not specify what is to be learned (Han, 2012). In contrast, in explicit instruction, learners are aware of what they have learnt (Han, 2012).These concepts should not be used interchangeably with deductive and inductive instruction. As Kim (2007) suggests, both deductive and inductive approaches can employ explicit instruction. In an inductive-explicit approach, the rules students generate are subject to teacher's feedback.

A lot of importance is given to grammar in Turkish EFL settings by both instructors and students. However, even if the learners practice the rules correctly in mechanical tasks, they tend to have difficulty in using the target structures correctly in their written products such as paragraphs or essays. This might be partly due to learners' lack of awareness of the structures as well as lack of self-confidence in using them. Inductive instruction (sometimes referred to as discovery-learning) can be assumed to increase learners' awareness and confidence regarding grammatical structures. However, establishing a link between grammar instruction and grammar accuracy in writing has been neglected. As Jones, Myhill and Bailey (2013) state, existing research lacks "theorisation of an instructional relationship between grammar and writing" (p,1241). Numerous researchers studied the effects of inductive vs. deductive teaching on the short and/or long term learning of grammar and students' attitudes towards these approaches (e.g., Erlam, 2003; Kim, 2007; Mohammed & Jaber, 2008; Takimoto, 2008; Dotson, 2010; Vogel, Herron, Cole & York, 2011; Dăng & Nguyễn, 2012). Han (2012) conducted a similar study with Turkish University EFL students, who are the population of the present study.

Among these researchers, Yuen (2009) is one of the few who focused on the effects of inductive instruction on grammar accuracy in writing, in the context of the Diploma English Program in Hong Kong. The results of the study indicated that inductive grammar teaching contributed more to long-term grammar accuracy in writing than did deductive teaching. Yet, overall, there was not a significant difference between the effects of the two approaches. However, the study in question examined only one written task as part of a pre and post-test design. Vogel (2010) investigated the effects of inductive and deductive instruction on eight open-ended writing tasks. The results did not demonstrate a significant difference. The present study aims to investigate the effects of inductive instruction on accuracy of grammar in writing for five target structures in five writing tasks in the English preparation programme of the School of Foreign Languages of Anadolu University. It also studies the grammar test results under the two instructional approaches through a pre and post-test. Furthermore, the present study aims to address the perspectives of both the instructor and students on inductive and deductive grammar instruction.

Statement of the Problem

Inductive and deductive approaches to teaching grammar have been studied since the beginning of the 20th century (e.g., Hagboldt, 1928) and continue to be the subject of quasi-experimental studies in the 21st century (e.g., Chalipa, 2013). A large and growing body of literature has investigated the effects of deductive and inductive approaches on the acquisition of various grammatical structures (e.g., Allison, 1959; Hsiao, 1999; Erlam, 2003; Haight, Herron and Cole, 2007; Kim, 2007; Mohammed & Jaber, 2008; Takimoto, 2008; Rokni, 2009; Dotson, 2010; Vogel, 2010; Vogel, Herron & Cole, 2011; Han, 2012; Uddin & Tazin, 2012; Đăng & Nguyên, 2013).The results of these studies have been contradictory. Some of them

suggested inductive grammar instruction was more effective in terms of performance on grammar tests whereas some found deductive approach more useful. The others did not reveal significant differences between the results produced by these two approaches. To the researcher's knowledge, to date, only Yuen (2009) and Vogel (2010) focused on the effect of inductive instruction on grammar accuracy in writing in particular. Both studies were unable to deem one of these approaches superior. As Yuen (2009) suggests, for L2 learners, writing tasks are challenging because they involve sentence construction and linguistic consciousness. Jones, Myhill and Bailey (2013) emphasize that there is an urgent need to "theorise an instructional relationship between grammar and writing, which might inform the design of an appropriate pedagogical approach"(p. 1243). Lack of research into the impact of inductive approach on grammar use in written tasks requires an in-depth exploration.

Turkish university preparatory programs are very intensive EFL classes which offer over 20 hours of English lessons a week for approximately one year; which results in the presentation of up to four grammatical structures every week. As learners are exposed to many grammatical structures in a busy schedule, they tend to have difficulty making use of these structures in controlled and free activities. One of the challenging skills for EFL learners is writing. Most learners have difficulty in using language structures correctly in written tasks such as paragraphs or essays. This might be due to their lack of confidence in or awareness of the structures. Inductive consciousness-raising tasks require the learner to discover the rules underlying language structures. Therefore, this approach could lead to an increased awareness and confidence during written tasks. Therefore, the effects of inductive and deductive approaches to grammar teaching on written production, i. e. writing

tasks, grammar test scores and the perspectives of the teachers and the students on this method need to be examined in a Turkish EFL classroom setting.

Significance of the Study

Previous research is "limited in that it only considers isolated grammar instruction and offers no theorisation of an instructional relationship between grammar and writing" (Jones et al., 2013, p.1241). The effect of contextualised grammar teaching on writing was explored by Jones et. al. (2013), suggesting a positive effect on their writing performance. Yuen (2009) investigated the impact of inductive grammar instruction on grammar accuracy in writing but examined only one written task. The overall results did not prove inductive or deductive instruction superior. Vogel (2010) examined eight writing tasks and did not observe a significant difference between the effects of the guided-inductive and deductive approach. The most recent study evaluating the effect of inductive and deductive grammar instruction in a Turkish University EFL setting (Han, 2012) did not examine the written output of the participants. Han administered a multiple choice pre and post-test to compare the gain scores of the participants. The participants did not produce any language. She refers to this situation as a limitation and further states that "it is still debated whether students are able to use these forms accurately and productively in written essays" (p. 73). She offers the effects of inductive and deductive instruction on written production as an area for future research. This study may contribute to the literature by filling this gap.

The present quasi-experimental study sought to explore the effects of inductive and deductive grammar instruction on the acquisition of conditionals and relative clauses in terms of written production, i. e. grammar accuracy in writing

tasks, and grammar test scores. It also focused on the perspectives of the instructor and the students towards these instructional approaches. Overall, the current study aimed at investigating whether either of the instructional approaches produced better outcomes in the short term. Accordingly, this study can help inform instructors' decision-making about their instructional habits, and perhaps encourage them to incorporate greater variety to their instructional habits. Moreover, material development units can take the results of this study into consideration while preparing or revising their work. They could be inspired to include more inductive tasks such as guided-discovery or consciousness-raising tasks in their materials. Furthermore, this study might benefit L2 learners by encouraging them to discover and pay more attention to language structures.

Research Questions

1) Is there a statistically significant difference between the effects of inductive and deductive grammar instruction on accuracy of conditionals and relative clauses in writing tasks?

a) What are the effects of inductive grammar instruction on the accuracy of conditionals and relative clauses in writing tasks?

b) What are the effects of deductive grammar instruction on the accuracy of conditionals and relative clauses in writing tasks?

2) Is there a statistically significant difference between the effects of inductive and deductive grammar instruction on the gain scores of learners with regard to conditionals and relative clauses?

a) What are the effects of inductive grammar instruction on the gain scores of learners with regard to conditionals and relative clauses?

b) What are the effects of deductive grammar instruction on the gain scores of learners with regard to conditionals and relative clauses?

3) What are the perspectives of the students and the instructor on inductive and deductive grammar instruction?

Conclusion

In this chapter, the background of the present study, the statement of the problem, the significance of the study, and the research questions were introduced. The next chapter will present the review of the previous literature on inductive and deductive grammar instruction, as well as related concepts and issues.

CHAPTER II: LITERATURE REVIEW

Introduction

The purpose of the present study is to examine the effects of inductive and deductive grammar instruction on written production, i. e. grammar accuracy in writing tasks. It also explores their effects on the short term learning of grammar structures as well as the instructor's and students' perspectives on inductive and deductive grammar instruction. This chapter aims to provide a review of the relevant literature including related concepts and issues. It is divided into four sections, the first of which is dedicated to the definitions and origins of inductive and deductive instruction. The second section explores the emergence of inductive grammar instruction. The third chapter reviews related concepts and issues. The last section is reserved for an overview of previous studies conducted to observe the effects of inductive and deductive grammar teaching in various aspects.

Inductive and Deductive Grammar Instruction

Definitions of Induction and Deduction

In order to develop an understanding of the inductive and deductive teaching/learning approaches, the nature of induction and deduction needs to be explored. Therefore, in this section, definitions of induction and deduction from various sources will be reviewed.

Rice (1945) defines induction as "the process of going from the known to the unknown and from the particular to the general" (p. 465). Widodo (2006) argues that during induction "we observe a number of specific instances and from them infer a

general principle or concept" (p.127) . Similarly, Carr (2009) explains it as "a form of reasoning in which one arrives at general principles or laws by generalising over specific cases" (p. 47). Hayes, Heit and Swendsen (2010) state that "inductive reasoning involves making predictions about novel situations based on existing knowledge" (p. 278). Michalski (1980) views it basically as "pattern recognition" (p. 349). Klauer and Phye's definition of inductive reasoning is "the detection of rules through the establishment of (a) similarity, or (b) difference, or (c) similarity and difference between (1) attributes or (2) relations" (p. 42) and they maintain that inductive reasoning is the key point in identifying patterns or structures. These various descriptions of induction above emphasize the common characteristics of making use of the available knowledge to discover new information and generate rules. Inductive reasoning aims to detect "generalizations, rules or regularities" (Klauer & Phye, 2008, p. 86). Marx (2009) states that "The detection of rules and regularities is a basic component of information processing in the human brain" (p. 40). Language acquisition involves "detecting and generalizing rules" (p. 42) to a great extent and a number of studies recognize these acts as the key elements in inductive reasoning (Marx, 2009). Marx's experimental study focuses on "whether fostering the ability to detect rules (i.e. inductive reasoning training)" (2009, p. 40) could improve young children's language competence. The results suggest that inductive reasoning training improved children's language competence, "especially when rule detection or comparison of attributes were involved" (Marx, 2009, p. 40). Since second language acquisition also relies largely on identifying rules and patterns, inductive reasoning might support second language acquisition as well. Grammar learning often requires explicit knowledge of the rules of the language, i. e. metalanguage. This explicit knowledge of grammar rules is more crucial for EFL

learners who rarely encounter the foreign language outside the classroom. Training EFL students in inductive reasoning might decrease their dependency on formal instruction. They can make use of induction to discover the rules of language from various sources. Thus, induction could be a very functional cognitive tool for EFL/ESL learners in developing their grammar knowledge.

Deduction, on the other hand, can be explained as "a form of reasoning in which one proceeds from general principles or laws to specific cases" (Carr, 2009, p. 47). Decoo (1996) defines deduction in language learning as the process of going "from the general to the specific, from consciously formulated rules to the application in language use" (p. 96). Deduction can be considered a safer cognitive strategy in language learning as the possibility of making mistakes might be lower when one acts according to a given set of rules. Thus, teachers and learners could feel more confident when deduction is practiced. Traditional teacher-centered and lecture-based instruction, where students apply the provided rules to specific examples, embodies the characteristics of deduction.

Origins and Definitions of Inductive and Deductive Instruction

The deductive approach to teaching was prevalent until the inductive approach was first adopted in scientific experimental learning and mathematics, in the 20th century (Yuen, 2009). Deductive instruction is generally referred to as the traditional teaching approach, in which the teacher is the authority, the lecturer and the source of information while students are 'passive receipents' (Hedge, 2000, p. 82) of information.

Inductive instruction emerged from "inductive reasoning, cognitive development and constructivist epistemology which was first used by Jean Piaget in

1967" (Yuen, 2009, p. 25). It is generally defined in contrast with the traditional lecture-based, deductive instruction. Prince and Felder (2006, p. 123) present inductive instruction as a "preferable alternative", which starts with "a set of observations or experimental data to interpret, a case study to analyze, or a complex real-world problem to solve". In inductive instruction, students are led to "analyze the data or scenario and solve the problem", creating the need for facts, rules and principles, " at which point they are either presented with the needed information or helped to discover it for themselves" (Prince & Felder, 2006, p. 123). However, it should be noted that an inductive approach does not eliminate the potential for frontal teaching or lectures. The teacher evaluates the learners' knowledge, leads them to question and clarify it and enables the construction of new knowledge (Bransford, Brown, & Cocking, 1999).

Inductive instruction needs to be regarded as a broader framework whose characteristics various methods, approaches and tasks might embody, rather than a specifically prescribed set of practices. Prince and Felder (2006) label inductive instruction as an umbrella term encompassing many methods such as inquiry learning, problem-based learning, project-based learning, case-based teaching, discovery-learning and just-in-time teaching. These methods share a number of common characteristics in addition to the fact that they are all recognized as inductive (Prince & Felder, 2006). They are all learner-centered, which means they aim to give the students more responsibility for their own learning compared to the traditional deductive approach (Prince & Felder, 2006). Prince and Felder (2006) argue that these methods can also be labeled as constructivist methods, which are based on the assumption that "students construct their own versions of reality rather than simply absorbing versions presented by their teachers" (p. 123). These methods

also adopt active learning, which requires the students to discuss questions and solve problems in class (Prince & Felder, 2006). Furthermore, in these methods students do most of the work in groups. Thus, these methods also employ collaborative or cooperative learning (Prince & Felder, 2006).

Feature ↓ Method →	Guided Inquiry	Problem-based	Project-based	Case-based	Discovery	Just-in-Time
Questions or problems provide context for learning	**1**	2	2	2	2	2
Complex, ill-structured, open-ended real-world problems provide context for learning	4	**1**	3	2	4	4
Major projects provide context for learning	4	4	**1**	3	4	4
Case studies provide context for learning	4	4	4	**1**	4	4
Students discover course content for themselves	2	2	2	3	**1**	2
Students complete and submit conceptual exercises electronically; instructor adjusts lessons according to their responses	4	4	4	4	4	**1**
Primarily self-directed learning	4	3	3	3	2	4
Active learning	2	2	2	2	2	2
Collaborative/cooperative (team-based) learning	4	3	3	4	4	4

Note: 1–by definition, 2–always, 3–usually, 4–possibly

Figure 1. Features of common inductive instructional methods (Prince & Felder, 2006, p.124)

Rice (1945) suggests that the teacher's primary role in inductive instruction is to help students learn, rather than "teach" (p. 465). This idea can be associated with the term learner autonomy, which was defined by Holec (1981) as "the ability to take charge of one's own learning" (p.3). According to Holec, autonomy is not innate. It can be attained through natural ways or formal learning. Oxford (2001) emphasizes that an autonomous learner has "conscious control of one's own learning process" (p. 166). Teacher-centered classrooms where students are "passive receipients of

knowledge" (Hedge, 2000, p. 82) cannot produce independent learners. Deductive teaching increases the learners' dependancy on the teacher or the textbook, which they see as the primary sources of knowledge. However, inductive instruction can encourage the student to continue learning inside or outside the classroom through discovery and gradually to become a more independent learner. Rule-discovery and autonomous learning can improve a language learner's performance (Wang, 2002). Rice (1945) further asserts that a learner who learns through his/her own efforts "under the skilled guidance of the teacher" is more advantageous as "the newly acquired knowledge" is prone to be incorporated with the previous knowledge and settle " more deeply and more permanently on his mind" (p. 465). This is also supported by the cognition research which suggest that "all new learning involves transfer of information based on previous learning" (Bransford, Brown & Cocking, 2000, p. 53).

The Emergence of Inductive Grammar Instruction

The origins of inductive grammar instruction can be traced back to a couple of centuries. According to Hammerly (1975), even in the sixteenth century, and probably earlier, deductive instruction was criticized for producing learners "who knew about the language but could not speak it." (p. 15). He further states that although there was occasional opposition to purely deductive instruction throughout the eighteenth and nineteenth century, deductive teaching was the norm. The reaction against the grammar translation method started in the nineteenth century and moved on to the twentieth century, which mostly advocated total induction in the form of direct method (Hammerly, 1975). In the beginning of the 20th century, Hagboldt (1928) proposed two main ways of presenting grammar structures: deductive and inductive. He illustrated the use of inductive approach through several linguistic

problems and stated that it was used very rarely. Decoo (1996) argues that during the Reform Movement of the 1880's, the contrast between direct and indirect methods was represented through the "induction versus deduction" argument in order to distinguish between "natural and grammatical" (p. 96) learning. He further suggests that the clash between these approaches continued afterwards, significantly in the shape of the conflict between the audio-lingual methods and cognitive approaches. Shaffer (1989) claims that inductive approach emerged as a subtype of explicit instruction, based on the theorotical framework of approaches such as audio-lingual method of the sixties which regarded learning as habit-formation. According to Fischer (1979), the inductive approach has historically been affiliated with the audio-lingual method and the deductive approach with the cognitive approach. Yuen (2009) suggests that Chomsky's innate hypothesis (Chomsky, 1957), which claims that people have "an innate language faculty which incorporated a set of universal priniciples, i.e. a universal grammar (UG)" (Larsen-Freeman, 2001, p. 35), helped the rise of the cognitive revolution that underlies inductive approach. The innatist position at its extreme argues that language acquisition is connected with a specific ability of the human mind for language (Musumeci, 2009). The earliest roots of the innatist position can be traced back to the Greek philosopher, (427-347 BCE) Plato, who suggested that the humankind "possess knowledge intrinsically" (Musumeci, 2009, p. 46). Musumeci (2009) states that this knowledge needs to be "activated and drawn out" (p. 47). She continues that:

> The teacher's role is to educate, from the Latin *educere*, which means literally 'to lead forth'. It is from Plato that we learn of the Socratic method, an instructional technique in which the teacher asks a series of carefully constructed questions each based on the student's previous

> response, leading students to arrive at the answer from what they already know. (p.47)

The description of the Socratic method above clearly reflects a number of characteristics of inductive instruction.

Inductive teaching has traditionally been explored as part of a dichotomy. However, there are also oppositions to this dichotomy of inductive instruction versus deductive instruction. As the terms inductive and deductive have been used to refer to various types of approaches and instructions, the distinction has become blurred (Decoo, 1996). Erlam (2003) argued that "both inductive and deductive methods of instruction fit along what Norris and Ortega (2000) described as a continuum of explicitness that ranges from the more explicit (deductive) to the less explicit (inductive)" (p. 243). Decoo (1966) attempted to solve this problem by describing five modalities of this dichotomy. DeKeyser (1994) also points out to the problem with the dichotomy. He states that the ultimate result of both deductive and inductive instruction is rule learning, and explicit learning is always the result of deductive teaching.

Analysis of Inductive and Deductive Instruction in Teaching Grammar

Inductive grammar instruction in foreign or second language teaching has been described with minor differences by various sources. Its universal understanding involves a lesson where the students are first exposed to the language features and then attempt to discover the patterns, structures and the underlying rules. In this section, several descriptions of inductive instruction will be analyzed.

Hagboldt (1928) illustrates inductive grammar instruction in the following manner: Learners are exposed to the language through a text, in which some

sentences respresent specific linguistic problems. Providing the learners with “well-formulated questions” (p. 440), we lead them to observe and discover the recurrence of these specific structures and even initiate them to formulate a rule for their observations (Hagboldt, 1928). Furthermore, he argues that inductive approach “is not a rediscovery of grammar” for the student but rather “a systematic attempt” to engage the students in mind-work that is not “beyond the intellectual grasp” (p. 443). He proceeds to state the basic principles behind the inductive approach: "Do not state what the student, if properly led, can find out for himself," or expressed positively, "Wherever possible make the student work out the problem through his own thinking." (Hagboldt, 1928, p. 443). Rice (1945) adopts a slightly different approach to inductive grammar instruction claiming that its “purest form” could eliminate the need for a text, or at least decrease the dependency on it. He describes the inductive grammar class as one in which the teacher is the guide rather than the lecturer and the students learn primarily through their own efforts. Yet, he highlights the crucial role of the teacher in the success of an inductive approach. Hammerly (1975) explains total induction through the direct method. With the direct method, in addition to the ban on the native language, students learn a foreign language through “subconscious control over grammatical structures without conscious analysis”, as in first language acquisition, “by sheer exposure to the language” (p. 15). Nonetheless, he emphasizes that there could be a balance, “a middle ground” (p. 15) between total induction and deduction. Shaffer (1989) criticizes the deductive approach to language teaching for neglecting meaning for the sake of form and promoting passive, rather than active participation of the students. He credits the inductive approach with permitting the learners to “perceive and formulate the underlying governing patterns presented in meaningful context” (p. 395) by not providing them

with the rules beforehand. Furthermore, he takes a critical position towards the association of inductive grammar instruction with the behaviorist audio-lingual method, which views language learning as habit-formation. He argues that, in contrast to audio-lingual method, inductive instruction leads the learners to "consciously focus on the structure being learned" (Shaffer, 1989, p. 395). Decoo (1996) associates induction with natural language learning and various direct methods, identifying it with acquisition. He describes it as the process of identfying patterns and generalizations from real language use. He outlines five modalities utilized in education:

Modality A: Actual deduction:

The teacher explicitly states the grammatical rule in the beginning of the learning process and students go on to apply the rules in examples and exercises.

Modality B: Conscious induction as guided discovery:

The learners are exposed to various examples first, often in the form of sentences, sometimes placed in a text. Later, the "conscious discovery" of the structures is conducted by the teacher through asking questions, which directs the students to "discover and formulate the rule".

Modality C: Induction leading to an explicit "summary of behaviour"

This type of induction is more behavioristic; the learner practices a structure intensively, by which the structure is " 'somehow' induced and internalized" (p. 98). At the end of the learning process, the teacher explicitly states the rule. Decoo (1996) criticizes this approach for avoiding to admit the importance of the explicit explanation and associates it with the audio-lingual method.

Modality D: "Subconscious" induction on structured material

This type of induction is directly related to implicit grammar instruction. Students are repeatedly exposed to language features on structured material and engage in drilling and practice. However, this approach does not rely on “explicitly formulated grammar” (p. 98) . "Subconscious capabilities" of the students are regarded as sufficient to make generalizations (p. 98).

Modality E : "Subconscious" induction on unstructured material

Intense language practice is given through authentic input without any linguistic manipulation, making these approach as close as possible to natural acquisition.

The type of deductive grammar instruction adopted in the present study is relatively similar to modality A: Actual deduction whereas the inductive one could be best associated with the modality B: Conscious induction as guided discovery. The inductive approach employed in this study might also be illustrated through Ellis’ (1998, p. 48) description of indirect explicit teaching, during which learners work on *consciousness-raising tasks* “in which they analyze data illustrating the workings of a specific grammatical rule”. He suggests that this approach might be more motivating as it is leads the learners to discover the grammar rules. This approach can also be more communicative if the tasks are done through group-work. Ellis (2006) proceeds to define inductive grammar teaching as an instructional approach in which learners are required to reach “metalingustic generalisation” (p. 97) through being exposed to grammatical structures; an ultimate explicit statement of the rule is optional. Inductive teaching is sometimes referred to as *discovery learning* (Hedge, 2000). Larsen-Freeman (2009) argues that inductive approach could be very convenient “for complex rules, which are difficult to articulate and

internalize" (p. 528). According to Brown (2001), an inductive approach to grammar teaching is more suitable because:

1) It is more similar to natural language acquisition where rules are incorporated subconsciously.

2) It is more in accordance with the interlanguage development in which learners acquire rules on individual timetables.

3) It enables learners to "get a communicative 'feel' for some aspects of language" (p. 365) prior to being exposed to overwhelming grammatical explanations.

4) It is more likely to establish intrinsic motivation as learners engage in discovery rather than lectures.

However, most adults state "the need to have the language system laid out explicitly with rules from which they can work deductively" (p. 147) which might be due to several reasons such as the effect of early formal language instruction on the individual cognitive style (Hedge, 2000). The results of the GUME (Gothenburg Teaching Methods English) project (1968-1971) implied that deductive instruction was more advantageous for adults (Yuen, 2009). Rivers (1975) also recommends deductive instruction for mature learners whereas she proposes an inductive approach for younger language learners. Furthermore, Sallas, Matthews, Lane and Sun (2007) propose that even the subjects "whose underlying structure is relatively explicit and salient are typically learned better with guided instruction than relatively unguided discovery learning" (p.2132). Kirschner, Sweller and Clark (2006) point out that according to a large body of research in education, more guided approaches to teaching produce greater gains compared to less guided approaches. As DeKeyser (2009) emphasizes, the focus here is on the comparison of deductive explicit

instruction and inductive explicit instruction. He continues to state that although inductive instruction, with various concepts and a number of terminologies, has been praised for decades, the literature on educational pyschology has become increasingly positive towards deductive instruction.

Related Concepts and Issues

Explicit versus Implicit Teaching

Ellis (2004) describes explicit knowledge as "the conscious awareness of what a language or language in general consists of and/or of the roles that it plays in human life" (p. 229). He defines it more simply as "knowledge of language about which users are consciously aware" or "knowledge *about* language and *about* the uses to which language can be put" (2004, p. 229). Ellis (2006) distinguishes the two different aspects of explicit language knowledge: *analysed knowledge* and *metalinguistic explanation.* Analysed knowledge involves "a conscious awareness of how a structural feature works" (Ellis, 2006, p. 95), whereas metalinguistic explanation comprises "knowledge of grammatical metalanguage and the ability to understand explanations of rules" (Ellis, 2006, p. 95). Ellis (2004) claims that "the kind of knowledge that involves metalingual awareness is distinct from the kind of knowledge that underlies everyday language use" (p. 231). He further states "In the case of normal language use, production and comprehension processes require little or no attention and are executed very rapidly. In the case of operations involving explicit knowledge, conscious control needs to be exerted" (p.231).

Implicit knowledge, however, is unconscious; it is "procedural" and "can only be verbalized if it is made explicit" (Ellis, 2006, p. 95). The following is his description:

> Implicit knowledge is intuitive, procedural, systematically variable, and automatic and thus available for use in fluent unplanned language use. It is not verbalizable. According to some theorists, it is only learnable before learners reach a critical age (e.g., puberty). (Ellis, 2008, p. 6-7)

Implicit knowledge is accesible for automatic use, whereas explicit knowledge generally reuqires controlled processes (Ellis, 2004). Several sources associate competence in an L2 with implicit knowledge (Ellis, 2006).The key point in distinguishing between explicit and implicit learning is intention and awareness (Scmidt, 1990). The basic illustration of implicit language learning is first language acquisition (Brown, 2000, as cited in Widodo, 2006) whereas explicit learning is almost always formal, taking place in educational settings.

Explicit grammar instruction involves metalinguistic explanations; grammar rules are presented in various approaches. Carter and Nunan (2001) present explicit teaching as "an approach in which information about a language is given to the learners directly by the teacher or the coursebook" (p. 222). Ellis (1998) refers to explicit instruction as "attempts to develop learners' explicit understanding of L2 rules—to help them learn about a linguistic feature" (p. 42). He defines the main issue in explicit teaching as whether to present explicit rules directly or to lead the students to discover the rules, i. e. direct and indirect explicit teaching, respectively. In direct explicit teaching, grammatical rules are illustrated in oral or written form and learners might additionally be provided with exercises in which they apply the rules (Ellis, 1998). On the other hand, indirect explicit teaching requires the learners to "analyze data illustrating the workings of a specific grammatical rule" (Ellis, 1998, p. 48) through consciousness-raising tasks. The descriptions above clearly

associate direct explicit teaching with the deductive approach and indirect explicit teaching with the inductive approach.

Implicit grammar instruction does not involve metalinguistic explanations; it relies on the exposure of the learners to the structures, i. e. "enough comprehensible input" (Krashen, 1982; Terrell,1977 as cited in Chalipa, 2013, p. 82). According to Dekeyser (1994), "no rules are formulated" (p. 188) in implicit instruction.

Inductive instruction can be carried out both explicitly and implicitly (Takimoto, 2008; Han, 2012). As Burgess and Etherington (2002) state, the inductive/deductive teaching dichotomy is occasionally associated with the explicit/implicit teaching dichotomy. Dekeyser (2003) emphasizes the importance of distinguishing between implicit learning and inductive learning:

> Inductive learning (going from the particular to the general, from examples to rules) and implicit learning (learning without awareness) are two orthogonal concepts (see figure 1). Via traditional rule teaching, learning is both deductive and explicit. When students are encouraged to find rules for themselves by studying examples in a text, learning is inductive and explicit. When children acquire linguistic competence of their native language without thinking about its structure, their learning is inductive and implicit. (p. 315)

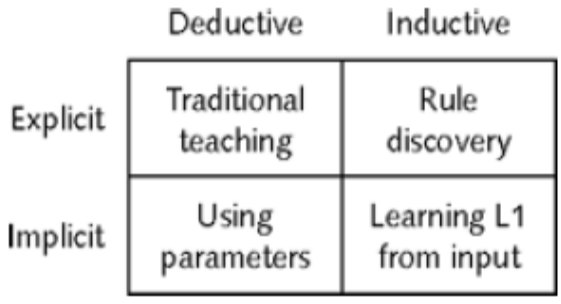

Figure 2. The inductive/deductive and implicit/explicit dimensions (DeKeyser, 2003, p. 314)

The dichotomy of explicit versus implicit learning/knowledge has also been criticized. DeKeyser (2009) emphasizes that whereas the fundamental aim of language learning is to have "highly automatized" procedural, that is, implicit knowledge of that language, it does not render declarative, that is, explicit knowledge insignificant (p.130). Especially in the early stages of learning when one's procedural knowledge is inadequate, declarative knowledge is of crucial support (DeKeyser, 2009). Furthermore, N. Ellis (2002) argues that explicit knowledge can influence implicit knowledge. DeKeyser (2009) attempts to reconcile the dichotomy as follows:

> …extensive practice is necessary, and [ ] this practice has to bridge the gap between the initial presentation of the L2 knowledge (in traditional deductive learning from the teacher's presentation) or the initial hypotheses formed on the basis of the input (in more inductive learning, be it implicit or explicit) and the desirable end stage of fully proceduralized grammar. (p.131, 132)

A large body of literature has been in favour of explicit instruction. DeKeyser (2003) emphasizes that a through analysis of the literature on implicit learning implies the impossibility of implicit learning of abstract structure, especially for adults. Reinders (2010) suggests that explicit teaching has been observed to have more prominent effects compared to implicit teaching in previous research. Burgess and Etherington (2002) point out that "some conscious attention to form" (p.434) is indispensable for language learning according to an increasing body of evidence from research in SLA and grammar learning. To this end, the inductive approach employed in this study involved explicit grammar instruction.

Focus-on-FormS vs Focus-on-Form

Two types of form-focused instruction can be identified; *focus-on-formS* and *focus-on- form* (i. e. accuracy) (Long, 1991). Focus-on-formS is concerned primarily with the target form whereas focus-on-form is principally concentrated on meaning (i. e. fluency) (Ellis, 2002; 2006).

A focus-on-formS lesson can be best illustrated by 'PPP', which is " a three stage lesson involving the presentation of a grammatical structure, its practice in controlled exercises and the provision of opportunities to produce it freely" (Ellis, Basturkmen & Loewen, 2002, p. 420). On the other hand, in focus-on-form instruction, "the attention to form arises out of meaning-centred activity derived from the performance of a communicative task" (Ellis et al., 2002, p. 420). To illustrate, students' attention to linguistic forms might be drawn by information-gap tasks (Ellis et al., 2002). The term information gap reflects the absence of information among those who are focused on a shared problem. Two-way information gap tasks "require the exchange of information among all participants, each of whom possesses some piece of information not known to, but needed by, all other participants to solve the problem" (Doughty & Pica, 1986, p. 307). Through information gap tasks, all learners involved need to communicate in an effective way to reach a common aim. This renders the use of the L2 meaningful.

Long and Robinson (1998) deem focus-on-formS as "teaching language forms disconnected from their functional uses" (as cited in Norris, 2009, p. 580) whereas Long (1991) defines focus-on-form "as an incidental attempt to draw learners' attention to a linguistic element in context, while maintaining a primary focus on meaning" (as cited in Mitchell, 2009, p. 684). Two types of focus-on-form approach can be adopted: *planned* focus-on-form employs opportunities to use a

predetermined grammatical structure while *incidental* focus-on-form attends to a grammatical structure when the learners need it in the course of a communicative activity (Ellis, 2006). There is also a third approach, namely, Focus on Meaning which is described by Doughty (2003) as "exposure to L2 targets or experience with L2 tasks, *but* no attempts to effect shifts of learner attention" (p. 263). She highlights the relationship between the three:

> Focus on formS and focus on form are *not* polar opposites in the way that "form" and "meaning" have often been considered to be. Rather, a focus on form *entails* a focus on formal elements of language, whereas focus on formS is *limited to* such a focus, and focus on meaning *excludes* it. Most important, it should be kept in mind that the fundamental assumption of focus-on-form instruction is that meaning and use must already be evident to the learner at the time that attention is drawn to the linguistic apparatus needed to get the meaning across (Doughty & Williams, 1998b, p. 4).

Figure 3 illustrates the operationalization of these instructional approaches:

Instructional type	***Operationalization, as derived from study descriptions***
Explicit	+ Rule explanation (deductive/metalinguistic), *or* + direction to attend to forms and arrive at rules (explicit induction)
Implicit	− Rule explanation, *and* − direction to attend to forms
Focus on meaning	Exposure to L2 targets or experience with L2 tasks, *but* no attempts to effect shifts of learner attention
Focus on form	Integration of forms and meaning, *any of*: (a) designing tasks that promote engagement with meaning prior to form (b) seeking task essentialness/naturalness of L2 forms (c) ensuring unobtrusiveness (d) documenting L2 mental processes (e.g., "noticing") (e) selecting target forms by analysis of learner needs (f) considering IL constraints
Focus on forms	None of (a)–(d) above apply, *and* learner attention was nevertheless focused in some particular way on the particular structure targeted for learning

Figure 3. Operationalizing the construct of L2 instruction (Doughty, 2003, p. 263)

Both the deductive and inductive treatments in the present study adopted the characteristics of Focus on Form, giving priority to meaning while directing the students to pay attention to and analyze the structure. At the beginning of the lessons, the students were presented with a listening or reading activity. The script or text illustrated the uses of the target structure and set the context. In the deductive group, the teacher continued with explanations regarding the meaning, use and the form of the target structure. In the inductive group, the students worked on consciousness-raising tasks in pairs. In the first part of the consciousness-raising tasks, the students were required to answer questions related to the meaning/function of the target structures. In the second part, they were supposed to work out the form of the target structures by following the instructions. Thus, the priority was given to meaning and form was not neglected. As mentioned in Figure 2, focus on form integrates meaning and form, giving priority to meaning.

Constructivism

As stated earlier, constructivism is one of the concepts that underlie the inductive approach to teaching. Tynjala (1999) explains the roots of constructivism as stated below:

> Constructivism is a theory of knowing whose origins may be traced back to Kantian epistemology and the thinking of Giambattista Vico in the eighteenth century, American pragmatists such as William James and John Dewey at the beginning of this century, and the great names of cognitive and social psychology, F.C. Bartlett, Jean Piaget, and L.S. Vygotsky (Tynjala, 1999, p. 363).

Prince and Felder (2006) also state that the roots of the constructivist school of thought can be observed in the work of Lao Tzu, Buddha, and Heraditus, and is reflected in the developmental theory of Bruner as well. Tynjala (1999) emphasizes that "constructivism is not a unified theory, but rather a conglomeration of different positions with varying emphases" (pp.363 - 364), such as social constructivism and cognitive constructivism. She explains this categorization as follows:

> These schools of thought differ from each other mainly in the role they give to the individual and the social aspects in learning. Whereas the radical or cognitive constructivist stresses individuals' knowledge construction processes and mental models, social constructivists or constructionists are more interested in social, dialogical, and collaborative processes. (Tynjala, 1999, p. 364)

Richards (2001) maintains that traditional transmission-oriented teaching approaches regard learners as passive recipients whereas the constructivist perspective emphasize that "learners are seen as building up a series of approximations to the target language, through trial and error, hypothesis testing and creative representations of input" (p. 214). The constructivist theory holds that learners "actively construct(…) their own knowledge rather than passively receiving information transmitted to them from teachers and textbooks" (Stage, Muller, Kinzie, & Simmons, 1998, p. 35). Stage et al. (1998) also state that according to constructivist theory, the teacher cannot simply deliver knowledge to the students, they need to "construct their own meanings" (p.35). In other words, learners construct their own knowledge. According to Tynjala (1999), constructivist pedagogy holds that learners use their current knowledge to make sense of the new knowledge. Therefore, it is based on "students' previous conceptions and beliefs

about the topics to be studied" (Tynjala, 1999, p. 365). She further asserts that constructivism highlights the importance of understanding the new knowledge instead of memorizing it, and it builds upon "social interaction and collaboration in meaning making" (p. 365). Haight et al. (2007) state that contemporary constructivist theories of learning search for methodology that requires the active participation of the learner instead of the deductive methods of technique, strategy and fact-learning. Hanson-Smith (2001) asserts that "constructivism involves the use of problem-solving during tasks and projects, rather than or in addition to direct instruction by the teacher" (p. 107). She further suggests that this epistemology highlights the need for "higher cognitive processes in the learning task" (p.108). According to Dotson (2010), the constructivist perspective views "developing critical thinking and analysis skills" (p. 75) as an essential element in the process of "accumulation of knowledge" (p.75). Learners are considered "autonomous agents responsible for discovering answers and producing their own interpretations" (Dotson, 2010, p. 75).

The social constructivist theory places utmost importance on "the interaction between between the language learner and the expert instructor" (Vogel, 2011, p. 356). Vygotsky's concept Zone of Proximal Development (ZPD) (1978) refers to the gap between the existing "developmental level" (p. 86) of a learner defined by "independent problem-solving" (p. 86) and "the potential development" that could be achieved "through problem solving under adult guidance or with more capable peers'' (p. 86). According to Vogel, Herron, Cole and York (2011), Vygotsky's ZPD theory (1978) encourages "collaborative discussions about grammar between teachers and learners" (p. 356). Vygotsky's idea of social cognition and interaction (1978, 1986) coincide with the guided inductive approach in that they both place the emphasis on the interaction between the expert (the instructor) and the novice (the

learner) (Haight et al., 2007). Haight et al. (2007) claim that in guided induction, the instructor guides the students -by his/her questions or tasks - to bridge "the gap between their capabilities and the learning task at hand" (e.g. the grammatical rule) (p. 299). In other words, the instructor helps the learner to complete his ZPD (Haight et al., 2007).

Constructivism is not specifically a theory of learning, a prescription for teaching or a set of particular practices (Airasian & Walsh, 1997; Brooks & Brooks, 1993; Windschitl, 1999). However, as Kesal and Aksu (2006) suggest, some teaching and learning activities can be more contributory to constructivist learning "if used appropriately" (p. 136).The pedagogical implications that constructivism is likely to deliver have been introduced by various scholars. Some of these suggested teaching and learning activities overlap with the practices used in inductive approach to teaching and learning:

- "Paying attention to learners' metacognitive and self-regulative skills and knowledge (Boekaerts, 1996; Brown, 1987; von Wright, 1992; Silven, 1992; Vermunt, 1995)" (Tynjala, 1999, p. 366).
- "Socratic dialogues, cooperative learning, projects, discussions, discovery learning, brainstorming (Fardouly, 2001; Crowther, 1997; Smerdon, Burkam & Lee, 1999; Wilson, 1997; Windschitl, 1999)" (Kesal & Aksu, 2006, p. 136).
- "Negotiation and sharing of meanings through discussion and different forms of collaboration (Dillenbourg, 1998; Gergen, 1995)" (Tynjala, 1999, p. 366).

- Learners actively engaged in the discovery process, including problem-solving activities that require the higher-order cognitive skills of analysis, synthesis, and evaluation (Svinivki & McKeachie, 2011).
- Teachers acting as "facilitators" who offer students "guided opportunities to interact with each other", instead of "as lecturers who simply dictate answers" (Slavich & Zombardo, 2012, p.575) .
- Instruction requiring students to fill in gaps and hypothesize with the goal of ceasing students' "dependence on instructors as primary sources of required information, helping them to become self-learners" (Prince & Felder, 2006, p. 125).

These pedagogical implications overlap with the common practices adopted in inductive teaching approaches. Prince and Felder (2006) continue to shed light on the relationship between constructivism and inductive approach:

> If the constructivist model of learning is accepted—and compelling research evidence supports it—then to be effective instruction must set up experiences that induce students to construct knowledge for themselves, when necessary adjusting or rejecting their prior beliefs and misconceptions in light of the evidence provided by the experiences. This description might serve as a definition of inductive learning (p. 125).

Consciousness-raising

Consciousness-raising, "pioneered by John Swales" (Hyland, 2009, p. 212) and promoted by Rutherford (1987) and Sharwood Smith (1988) is an approach in which learners are required to "analyze, compare and manipulate representative samples of a target discourse in a process known as *rhetorical consciousness-raising"* (Hyland, 2009, p. 212). Swales (1999, as cited in Hyland, 2009) points out

that this approach is more focused on "…producing better academic writers than with simply producing better academic texts." (p. 212). This characteristic of the approach makes it suitable for the purposes of the present study which is concerned with grammar accuracy in written tasks. He further claims that the intention of this approach is to equip learners "with skills and strategies that will generalize beyond the narrow temporal domains of our actual courses" (p. 213).

According to Carter and Nunan (2001), consciousness-raising is often regarded as equivalent to *language awareness*, which can be defined as "an understanding of the human faculty of language and its role in thinking, learning and social life" (p.223); yet consciousness-raising highlights "the cognitive processes of noticing input or making explicit learners' intuitive knowledge about language" and assumes that "an awareness of form will contribute to more efficient acquisition" (p. 220). Consciousness-raising acknowledges "the role of metalinguistic activitiy in language learning" (p. 163), yet takes a different approach than the deductive approach (Hedge, 2000). Fotos and Ellis (1991) employed consciousness-raising tasks to create a communicative atmosphere while generating explicit knowledge of grammatical structures. They emphasize that the key characteristic of CR (consciousness-raising) tasks is that they enable learners to negotiate meaning while trying to solve a linguistic problem. Ellis (1997) illustrated a CR task as:

> a pedagogic activity where the learners are provided with L2 data in some form and required to perform some operation on or with it, the purpose of which is to arrive at an explicit understanding of some linguistic property or properties of the TL (p. 160 as cited in Mohamed, 2004, p. 229).

Ellis (2010) emphasizes the fact that "a CR task makes language itself the content by inviting learners to discover how a grammatical feature works for them" (p. 48) as

learners are required to discuss a linguistic point among themselves. Hedge (2000) describes consciousness raising tasks as follows:

> Consciousness-raising tasks ask students to formulate rules about English through meaningful negotiation. The basic idea is to give students sufficient examples so that they can work out the grammatical rule that is operating. A useful activity for introducing intermediate students to inductive learning is to give them examples of a simple grammatical distinction to work out [...] (2000, p. 163).

Ellis (2010) proposes the common characteristics of CR tasks:

> 1. There is an attempt to *isolate* a specific linguistic feature for focused attention.
>
> 2. The learners are provided with *data* that illustrate the targeted feature and they may also be provided with an *explicit rule* describing or explaining the feature.
>
> 3. The learners are expected to utilize *intellectual effort* to understand the targeted feature.
>
> 4. Learners may be optionally required to verbalize a rule describing the grammatical structure (p. 48, 49).

Ellis (2010) also explains the rationale behind using CR tasks. Firstly, explicit knowledge aids implicit knowledge by directing the learners to notice the grammatical pattern in input and "to notice the gap between the input and their own interlanguage" (p. 50). The second argument is that "learning is more significant if it involves greater depth of processing" (p. 50). CR tasks encourage discovery learning through problem solving (Bourke, 1996 cited in Ellis, 2010). The underlying

principle is that what learners discover through their own efforts is more memorable than what they are directly told (Ellis, 2010).

Fotos (1992) compared the efficiency of grammar consciousness-raising tasks, communicative tasks and the traditional teacher-fronted grammar lessons. She worked with 160 Japanese college EFL learners. There were three treatment groups in her study. The communicative group performed three communicative tasks, listening and noticing dictatiton activities. However, they did not receive any grammar instruction. The grammar tasks group performed three grammar consciousness-raising tasks, which required them to analyze and solve grammar problems interactively. The grammar lesson group "received three teacher-fronted grammar lessons in English" (p. 36). The grammar tasks group and the grammar lesson group were given pre-tests and post-tests. The gain scores of the grammar tasks group and the grammar lesson group did not demonstrate a significant difference. This result implied that grammar consciousness-raising tasks were as effective as traditional grammar lessons. Qi (1994) also focused on grammar consciousness-raising. In his study there was one experimental group and there were two control groups, which were all parts of a writing course. In the experimental group, three types of subordinate clauses were introduced in meaningful contexts, structurally analyzed and practiced in discourse-level SC (sentence combining) exercises (Qi, 1994, p. ix). They were provided with corrective feedback. In the first control group, no grammar instruction was given on the target structures. In the second control group, grammar instruction was given, but it was "decontextualized, and exercises were limited at the sentence level" (Qi, 1994, p. ix). A grammaticality judgement test and an essay test were given to all groups before and after the treatment. The results of post-tests were generally in favor of the experimental group.

The experimental group "significantly increased knowledge of the target clauses and uses (frequency) of them in writing", compared to the control groups. However, the experimental group did not improve the accuracy in the use of the target structures significantly. Litherland (1995) explored the effectiveness of grammar consciousness-raising in a Spanish course during a semester. The experimental group received instruction via consciousness-raising techniques. The treatment consisted of three steps. In the first lesson, input on the target structure was provided. In the next lesson, the use of the target structure was highlighted and brought to the students' attention. In the third lesson, there was a problem-solving activity. The control group covered the same subject, but the instruction was communicative. A grammar task was used to compare the the two groups. The results showed a statistically significant difference in the results, in favor of the experimental group. Öncü (1998) investigated whether grammar consciousness-raising tasks were an effective alternative to traditional teacher-fronted grammar instruction. The target structure was modals and the participants were 60 tertiary level EFL students in Turkey. The experimental group was instructed through grammar consciousness-raising tasks while the control group receieved teacher-fronted instruction. The treatment lasted for five weeks. A pre and post-test were administered for both groups. The results suggested that grammar consciousness-raising tasks were more effective than traditional grammar instruction in terms of the teaching of modal verbs. Brender (2002) investigated the effectiveness of teaching articles to ESL students in writing classes using consciousness-raising methods. The participants were 91 Japanese students enrolled in a writing course. The experimental group receieved explicit grammar instruction on articles through consciousness-raising techniques such as problem solving. The control group was not explicitly instructed on articles. The

results of cloze tests and writing tasks showed that the experimental group improved their knowledge of articles significantly better than the control group. Mohamed (2004) explored learners' attitudes towards inductive grammar consciousness-raising tasks and deductive grammar consciousness-raising tasks. The inductive consciousness-raising task directed learners to discover the rules for the target structure whereas the deductive consciousness-raising task presented explicit explanations regarding the target structure. The participants were 51 ESL students. A task evaluation questionnaire was administered in order to investigate the participants' opinions and attitudes. The results implied that the participants considered both kinds of tasks to be useful and they did not prefer one task type specifically. Eckhert (2008) examined the effects of consciousness-raising tasks in two German language classes consisting of 31 participants. Each class was given two consciousness-raising tasks: a text reconstruction task and a text repair task. The text reconstruction task required the students "to listen a short text twice, take notes individually during the second listening, and then jointly reconstruct in writing the original text as closely as possible" (p. 124). For the text repair task, the participants needed to work on some keywords to complete a text accurately and logically. There was a pre and post-test and a delayed post test. The results suggested that consciousness-raising tasks improved explicit L2 significantly. McNicoll and Lee (2011) replicated Eekhart's study (2008) exploring the effectiveness of two types of consciousness-raising tasks: text reconstruction and text repair. They adopted a pre and post-test and a delayed post-test design. The results implied that the participants made learning gains of various grammatical elements from text repair tasks. However, text reconstruction tasks did not prove to be useful. Idek, Fong and Sidhu (2013) explored the effects of two different types of Consciousness-raising tasks on

learning Subject-Verb Agreement (SVA). There were 28 participants who were divided into two groups. Group 1 worked on Grammaticality Judgement (GJ) tasks whereas Group 2 worked on Sentence Production (SP) tasks. The treatment lasted for eight weeks. A pre-test was administered before the treatment and a post-test was given after the treatment. They were also given questionnaires and a number of them were interviewed. The results implied that both kinds of consciousness-raising tasks supported SVA learning. However, SP tasks were descriptively better in terms of gain scores compared to GJ tasks. Amirian and Abbasi (2014) inquired whether Grammar Consciousness-Raising (GCR) tasks could have a more significant effect on grammar learning than the Presentation-Practice-Production (PPP) method of grammar instruction. The participants were 62 pre-intermediate students who were divided into two groups. The participants in the experimental group were instructed through GCR tasks whereas the control group was instructed through the PPP method. The results implied that GCR tasks were more effective than the PPP method.

Inductive and Deductive Grammar Instruction in Previous Research

Inductive and deductive grammar instruction has traditionally been compared to each other (e. g., Allison, 1959; Erlam, 2003; Kim, 2007; Adel, 2008; Takimoto, 2008; Yuen, 2009; Dotson, 2010; Vogel, 2010; Vogel, Herron, Cole & York, 2011; Han, 2012). There has been an increase in the number of (quasi-)experimental studies comparing inductive and deductive approach in the 21st century. The results have remained contradictory.

The results of a variety of studies showed that deductive instruction was more useful. Erlam (2003) explored the effects of deductive and inductive instruction on the acquisition of direct object pronouns in a French as a second language setting.

The deductive instruction in her study involved rule presentation and metalinguistic explanation whereas the inductive instruction focused on form without explicit grammar instruction. She observed a significant advantage for the deductive instruction group compared to the inductive instruction group in her study. Mohammed (2008) compared the effects of the inductive and deductive approaches on 93 Jordanian university EFL students' use of active and passive voice in English. In the deductive group, the participants were provided with explicit rules and examples. In the inductive group, the participants were provided with content and examples without explaining any grammatical rule. Both groups received a pre-test, two lessons and a post-test. The results of the pre and post-test indicated that the deductive group improved its knowledge of the target structure significantly better than the inductive group. Chalipa (2013) focused on the effects of inductive and deductive grammar teaching in an Iranian universtiy. A sample population of 40 students were instructed inductively or deductively on ten chosen grammatical structures. The results of the prestest and post-test suggested that deductive approach was more effective on short-term learning. Their effects on long-term learning of the target structures were similar.

There are various studies whose results suggest that inductive instruction is more effective. Herron and Tomasello (1992) compared guided-inductive and deductive methods of instruction in a beginner-level French course. Both groups worked through oral drills. In the guided-induction group, no explicit explanation of a grammatical rule was formulated. In the deductive group, the teacher briefly explained the grammatical rule. The results of the post-tests implied that guided-induction was a more useful approach than deduction for certain grammatical structures. Haight, Herron and Cole (2007) compared the effects of deductive and

guided-inductive approaches on grammar learning for an elementary level French as a foreign language course. There were 47 participants. The study had a quasi-experimental within-subjects design. The participants were instructed deductively on four grammar structures whereas they received guided-inductive instruction on four other grammar structures. With the deductive approach, the instructor presented the grammatical rule and showed some sample sentences. Then, the students practiced orally via a Powerpoint exercise. With the guided-inductive approach, the students started with the same Powerpoint oral practice. The analysis of the target structure followed this exercise. They were not provided with explicit explanations for the target structures. They analyzed the same sample sentences with blanks for the missing target structure. The instructor assisted them in this process, asking them a series of guiding questions which directed them to fill in the blanks. The short-term learning was inquired through eight immediate posttreatment quizzes. The long-term gains were explored through a pre-post test. The results indicated that the mean scores for all tests were higher in the guided-inductive approach, and the difference was statistically significant. Kim (2007) sought to find out whether there would be a significant difference between an explicit-inductive/cooperative instruction and an explicit-deductive/individualistic instruction for the acquisition of English relative clauses. His participants were 90 Korean university-level EFL learners, with 45 students in the experimental group and 45 students in the control group. The treatment lasted for four weeks. The instructional material packet of the explicit-inductive/cooperative instruction group included textual examples of the target structure and worksheets of discovery activities which they needed to cooperate on as homework. With the texts and the worksheets, the participants were required to discover the rules and patterns and make hypotheses. In the instructional packet of

explicit-deductive/individualistic instruction group, the material presented the rules and explanations first. Then, example sentences and practice activities were provided. The experimental group which received an explicit-inductive/cooperative instruction scored significantly higher than the control group which received an explicit-deductive/individualistic instruction. Thus, the explicit-inductive/cooperative instruction was more effective than the explicit-deductive- individualistic instruction. Rokni (2009) studied the effects of explicit-inductive and explicit-deductive approaches comparatively. The participants were 110 Iranian university EFL students. There was an experimental group of 55 students and a control group of 55 students. In the experimental, inductive group, the teacher provided explicit corrective feedback to the rules or patterns that the participants discovered. The deductive group received traditional explicit-deductive teacher-fronted instruction. A pre and post-test and a delayed post-test was administered. The results showed that the inductive group scored significantly higher than the control group. Vogel (2010) investigated whether guided inductive or deductive grammar instruction promoted learning more effectively in French teaching. Furthermore, she inquired whether the implementation of cultural information into grammar teaching was more successful in guided inductive approach or deductive approach. The guided inductive approach brought immediate gains in grammar tests. However, there was not a statistically significant difference between the two approaches regarding grammar accuracy in writing tasks. Furthermore, although the culture pre/post-test demostrated improvement, there was no interaction effect. Vogel, Herron, Cole and York (2011) compared the effects of a guided inductive and deductive approach on short and long-term learning of 10 structures. The study has a mixed-methods design which assessed the learning of the structures and explored the preferences of the

participants. It had a within-subjects design to evaluate the participants' performances in both approaches. A pre and post-test and immediate post-treatment tests were administered. The findings implied that the guided inductive approach had a significantly greater effect on short-term learning. However, "the long-term findings and the relationship between preferences and performances were not significant. Analyses indicated that students who preferred explanations of the rules performed better with a guided inductive approach" (p. 353). Dăng and Nguyễn (2012) explored the effects of indirect explicit grammar instruction on EFL learners' mastery of English tenses. The results indicated that the group which was instructed inductively outperformed the one instructed deductively in terms of analysis of grammar rules and oral proficiency; except for the use of grammar structures in a pre-defined context. Smart (2014) explored the role of guided induction in paper-based data-driven learning in the context of an ESL grammar course in a university. The study specifically inquired "whether corpus-informed grammar instruction is more effective through inductive, data-driven learning or through traditional deductive instruction (p. 184). There were 49 participants in the study. The learners received one of the three instruction types. During the data-driven guided inductive instruction, the learners studied the corpus informed "pre-selected examples of language data" (p. 188). They were "guided by the teacher to make observations, typically through group- or pair-based problem-solving activities, to identify patterns or trends about the language data" (p. 188). If necessary, the teacher assisted them with hints or suggestions in this process. Finally, they were "guided to complete subsequent activities using the patterns of the grammar feature under review" (p. 188) . The deductive PPP group first received the corpus informed grammar rules, including form, meaning and use. Then they practiced the different forms of the

target structure in different contexts, and produced it in short written texts. The third group received the same deductive treatment, "but used traditional grammar teaching materials instead of corpus-informed descriptions of rules and activities" (p. 190). Results of the pre-test, post-test, and delayed post-test demonstrated that the data-driven guided inductive group significantly improved their grammar ability with the target structure, whereas the other two groups did not make significant gains.

The comparison of inductive and deductive instruction has not always brought significant findings. Allison (1959) inquired whether inductive or deductive approach of teaching grammar would "result in more effective acquisition of knowledge" (p. 5). Her participants were high school seniors. The study focused on two groups, an inductive group and a deductive group. The students were given the pre-test before the treatment. The inductive group first examined the material in which the target structure was embedded. Then, the teacher pointed out to the target structure by questioning the students. The procedure continued with the teacher's explanation and a group discussion. The deductive group was instructed with the ultimate goal of learning and applying the rules. The students in the deductive group listened to the lecture and took notes. The treatment lasted for an academic year. At the end of the treatment, the post-test was administered in both groups. The results did not demonstrate a significant difference between the gain scores of the two groups. However, the inductive group's scores improved slightly better. Thomas (1970) focused on college freshman students. He compared the effects of inductive instruction versus deductive instruction on the improvement of formal grammar and mechanics, vocabulary and reading comprehension, and composition. There were two experimental groups. One of them was the inductive group and the other one was the deductive group. Additionally, there were four non-experimental classes. In

the inductive group, the teacher and the participants compared examples that illustrated the use or the structure of certain language features and attempted to reach a rule or a generalization from them. In the deductive group, the textbook was the primary source in the class. The rules, principles or generalizations were presented by the teacher. Later, examples of the rules in specific instances were provided. The treatment lasted over the period of a semester. A pre and post-test were given to the participants. The inductive group improved significantly better in the areas of vocabulary and reading comprehension. In grammar and mechanics, the deductive group outperformed the inductive group. However, the difference was not statistically significant. Regarding compositional abilities, the inductive group improved better, though the difference was not statistically significant. Thomas (1970) concluded that none of the methods were superior to the other. Hsiao (1999) focused on the effects of inductive, deductive or a combined method on learners of different learning styles, i. e. field dependent and field independent learners. The participants were 90 university students taking a Spanish course. There were three treatment groups. A pre and post-test was conducted. The results implied there was no significant difference between the approaches or their effect on the learning style. Takimoto (2008) investigated the effects of deductive and inductive teaching approaches on the acquisition of pragmatic competence on learners of English as a foreign language. There were a total of 60 participants in four groups. There were three treatment groups: the deductive instruction group, the inductive instruction group which worked on problem solving tasks and the inductive instruction group which worked on structured input tasks. All of the three experimental groups receiving inductive and deductive instruction performed better than the control group which received no treatment. There was not a significant difference between the

deductive and inductive approaches. Yuen Ho Yan (2009) focused on the effects of inductive and deductive teaching on generic skills and grammar accuracy in writing. He concluded that deductive teaching contributed to immediate improvements in grammar with relation to participles and sentence structures whereas inductive teaching brought long-term improvements in grammar and also developed many generic skills in the longer term. However, the effects of inductive and deductive approach in grammar teaching did not differ significantly in the long or short term. Dotson (2010) evaluated the effects of deductive and guided-inductive approaches in an advanced French course in a university. There were 41 participants. Pre-tests, post-tests and immediate post treatments tests were administered. There was no significant difference between the effects of the two approaches on the short term learning of the target structures. However, the guided-inductive group made significant gains in the long term. Despite this result, the qualitative findings from semi-structured interviews demonstrated that the students preferred to learn deductively. Jean and Simard (2013) explored the effects of inductive and deductive approaches, as well as the relationship between learning gains, preferences and learning styles on French as a second language learners. The participants were 138 junior high school students in Quebec, Canada. The study had a within-subjects design. The participants were instucted deductively in one unit and inductively in one other unit. Data were collected through pre and post-tests, treatment apprasial and preference questionnaires and a learning style survey. The results indicated that the students preferred deductive instruction although they considered both approaches equally useful. There was no significant difference between the gains from the two units. Moreover, there was no relationship between learning gains and learning styles or preferences. Tammenga-Helmantel, Arends and Canrinus' (2014)

quasi-experimental study compared the effectiveness of inductive, deductive, implicit and incidental grammar instruction, as well as the effect of complexity of the grammar structure on these instructional approaches. There were 981 participants in lower secondary education who were enrolled in German, English or Spanish as a second language classes. The study employed a pre and post-test design, with a series of lessons on the degrees of comparison in between. The tests assessed both metalinguistic knowledge and the production of the grammatical structure. There was also a control group which was not exposed to the target structure. The differences between the students' test scores under each instructional approach were examined through analysis of variance. The results demonstrated that "any kind of grammar instruction (explicit and non-explicit forms) is more effective than no grammar intervention/exposure" (p. 198). Moreover, the complexity of the grammar structure had no relevance to the effectiveness of the approaches.

To the researcher's knowledge, there is only one recent experimental study which compared the effects of inductive grammar instruction and deductive grammar instruction on a Turkish EFL contect. Han (2012) worked with 70 participants randomly assigned to an implicit-inductive experimental group and explicit-deductive control group. She compared the effects of these approaches on the learning of if clauses. The treatment lasted for four weeks. In the explicit-deductive instructional approach, the teacher presented the students with the metalinguistic explanations, with an emphasis on form. The PPP (presentation-practice-production) order was followed. In the implicit-inductive instructional group, the teacher did not provide any metalinguistic explanations at any time. The students worked on meaningful tasks and form-focused tasks, which "were developed to lead language learners to realize the need to focus on the targeted forms" (Han, 2012, p.41) There

was a pre-test, post-test and a delayed post-test. The data gathered suggested that both the inductive and the deductive approaches in her study were effective, with no significant difference between the two approaches.

The inconsistency of the findings of several studies with similar designs, as well as the scarcity of the studies examining grammar accuracy in written tasks demonstrate the need for further research.

Conclusion

This chapter explored the relevant literature on inductive and deductive teaching, their effects on grammar accuracy in written tasks as well as related concepts and issues. The previous literature has rarely focused on written tasks. Furthermore, the contradictory nature of the findings of the previous literature require further exploration. The purpose of the present study is to contribute to the literature in these aspects. In the next chapter, the methodology of the present study will be introduced through detailed information about the setting and participants, data collection including the data collection procedures, the instruments and materials, and data analysis procedures.

CHAPTER III: METHODOLOGY

Introduction

The present quasi-experimental study sought to explore the effects of inductive and deductive grammar instruction on the acquisition of conditionals and relative clauses in terms of written production; i.e. grammar accuracy in writing tasks, and grammar test scores. It also focused on the perspectives of the instructor and the students towards these instructional approaches. Overall, the current study aimed at investigating whether either of the instructional approaches produced better outcomes in the short term.

In this chapter, there are five main sections consisting of the setting and participants, the research design, instruments, procedure, and data analysis. In the first section, detailed information about the participants and the setting is provided. In the second section, the research design is described briefly. In the third section, the data collection instruments; namely five writing tasks, a pre and post-test of the target structures, a questionnaire and semi-structured interiew are introduced. In the fourth section, the implementation of the treatment is illustrated rigorously. Finally, in the fifth section, the data analysis process is explained.

The Setting and Participants

The study was conducted in the School of Foreign Languages of Anadolu University in Eskişehir, Turkey. This university has an intense English language preparation programme whose class hours range from 20 to 26 hours a week. At the time of the study, the school adopted a modular system. There were five modules in

total. The modules were based on the CEFR (Common European Framework of Reference for Languages) levels. CEFR is a guideline "designed to provide a transparent, coherent and comprehensive basis for the elaboration of language syllabuses and curriculum guidelines, the design of teaching and learning materials, and the assessment of foreign language proficiency" (Council of Europe, 2011). It provides the descriptions of six levels of language proficiency: A1 and A2, B1 and B2, C1 and C2. A1 is the lowest proficiency level whereas C2 is the highest proficieny level (Council of Europe). The modules were adapted to the institution's curriculum as: A (starter), B1.1 (elementary), B1.2 (pre-intermediate), B2.1 (intermediate), B2.2 (upper-intermediate). Each module lasted for eight weeks and the students had to pass a final exam in order to start the next module. At the end of the last module (B2.2), the students who passed a final exam and a proficiency exam were able to graduate. The lessons were designed for integrated skills. A coursebook was followed and it was an important element in addition to CEFR in the preparation of the syllabus.

The convenience of the institution and the diversity of the students' backgrounds were the key factors in the selection of this setting. Formal consent was granted from both the administrators of the institution and the participants.

The participants were 38 Intermediate (B1.2) level students who were enrolled in a preparatory English program which they had to complete in order to be able to study at their departments. However, the number of participants for each data collection instrument changed due to the students' absence. Intermediate students were selected as learners of higher levels (Han, 2012) and complex structures (Larsen-Freeman, 2009) are considered to be more suitable for inductive grammar teaching.

The Research Design

The present study adopted mainly a quantitative approach, making use of a semi-structured interview as an additional qualitative source. It was a quasi-experimental study with an experimental group and control group, each consisting of 19 students. In experimental research, the researcher purposely controls and manipulates the factors that influence the events that he/she is exploring (Cohen, Manion & Morrison, 2007). An experiment includes "making a change in the value of one variable – called the independent variable – and observing the effect of that change on another variable – called the dependent variable" (2007, p. 272). The current study employed an exploratory attitude, "discovering the effects of certain variables" (p. 272). A 'true' experiment is conducted in labarotary conditions whereas the quasi-experiment is undertaken in a natural setting, where variables can be "isolated, controlled and manipulated" (p. 274). One of the most important factors that distinguish quasi-experimental studies from a true experimental study is that they study groups that have been formed by means other than random selection. Cohen et al. (2007) argue that the majority of empirical studies undertaken in educational settings are quasi-experimental. This situation results from the inability of the researchers to work under laboratory conditions in educational settings, such as the inability to randomly assign participants to experimental and control groups. This was the case in the current study, in which the experimental group and the control group consisted of previously constituted classes. Convenience sampling involves the researcher selecting the sample from the ones available and easily accessible (Cohen et al., 2007). The present study was conducted in the institution in which the researcher works. The experimental and control group consisted of previously formed classrooms. Therefore, convenience sampling, rather than random

sampling, was employed. Both of the groups were made up of students who had scored similarly in the final exam of the previous module. The experimental group received inductive grammar instruction whereas the control group was instructed deductively. From this point, they will be referred to as the inductive group and the deductive group. The treatments were conducted by one teacher, who taught 8 hours a week to each of the classes. The treatment process will be described in detail in the procedure section of this chapter.

Instruments

Writing Tasks

The data collection instruments included five writing tasks, each of which required the use of one of the target grammar structures, i. e. the conditionals and relative clauses. The students were presented with two alternatives as prompts and required to choose one and write a 250-300 word paragraph in response (See Appendix G). However, the students generally wrote less than the required number of words. The instructions asked them to use the target structure in their writings. These writing tasks were done as in-class activities by the students. However, they did not receive any help from either the teacher or each other. These writing tasks were analyzed by the researcher in terms of three aspects: Attempted use, correct use and incorrect use. The attempted use was the total number of the correct and incorrect uses of the target structure in a writing task. These were counted for each paper. Mistakes that were not directly related to the target structures were ignored (e. g., gerund-infinitive, countable-uncountable and wording) (See Appendix J). Regarding the conditionals, only full sentences with both the if clause and result clause were taken into consideration. However, when there were more than one if or result clause in the same sentence, and one of them was correct and the other was

incorrect, they were counted as one correct use and one incorrect use (See Appendix J). There were 148 writings in total. As the consistency of scoring is expected to be lower when there is some judgement involved (Hughes, 2003), approximately twenty-five percent of the papers were analyzed by an external rater, who was a colleague of the researcher. In order to increase the scorer reliability, negotiation was made to reach a common decision on certain papers in terms of the categorization. The numbers of attempted use, correct use and incorrect use in the written tasks of the inductive and deductive groups were compared through and independent samples *t* test for the normally distributed data and a Mann Whitney U test for the data that were not normally distributed in the Statistical Package for the Social Sciences (SPSS) 20 software.

Pre-Post Test

A grammar test including questions on both form and meaning of the target grammar structures was administered as pre and post-test to both groups in order to compare the students' knowledge of the target structures before and after the treatment, as well as to compare the difference between the two groups (See Appendix C). The test consisted of 28 questions, with four questions on each conditional (zero conditional, first conditional, second conditional and third conditional) and 12 questions on relative clauses (with where, who, which and that). It was adapted from several web resources. It was piloted in another university with English Preparation Program students and a split-half reliabilility test was conducted on SPSS. It had medium reliability in the level of .525 (See Table 1).

Table 1

Split-half Reliability Test Results of The Pre-post Test

	Cronbach's Alpha	Guttman Split-Half Reliability	N
Part 1	.365		14
Part 2	.062	.525	14

This multiple choice test was administered in an exam format during the treatment, so the students did not get help from any resource. Thirty-two students took both the pre-test and the post-test. The difference between results of the pre-test and post-test was considered the gain score of the students. The results of the pre and post-test were compared within the groups by paired-samples *t* tests and between the two groups with an independent samples *t* test through the SPSS programme.

Questionnaire

A questionnaire adapted from Kazaz (2015) was administered in the inductive group after the treatment to reveal their attitudes towards inductive grammar instruction (See Appendices D and E). It was designed in Likert Scale and consisted of 10 questions. It illustrated an example of a consciousness-raising task and included the definition of inductive grammar instruction in the instructions. It was administered in Turkish in order to avoid language problems for the students. Fourteen students took the questionnaire. The students were not asked to write down their names. The results were analyzed to see the frequency and percentages of each answer that revealed the students attitudes towards inductive grammar instruction. The students in the deductive group were not given a questionnaire as they were not exposed to inductive instruction during the treatment and they might not have come across it in their educational experiences before the present study. Therefore, they

might not have been able to make a comparison between the two instructional approaches.

Interview

After the treatment, a semi-structured interview consisting of 10 questions was conducted with the instructor in order to obtain her views on both deductive and inductive grammar instruction, their practicalities and impracticalities and to make a comparison between the two. The interview was partly adapted from Yuen (2009) and partly prepared by the researcher. This interview provided insights into the treatment process from the instructor's perspective. It was conducted in Turkish by the researcher so that it would be more fluent and effective. It was recorded by a mobile phone and later transcribed verbatim and translated into English by the researcher. The interview was analyzed thematically and four key themes were elicited.

The Treatment

The participants were placed in their classes according to their scores on the final exam of the previous module. One instructor conducted the treatment in both classes. The instructor was provided with a guideline (See Appendix A) prepared by the researcher in order to better ensure the adoption of the two methods correctly. Before the treatment, the grammar pre-test was administered in both groups in order to measure the students' knowledge of the target structures. The treatment lasted for approximately four weeks. The lessons were based on the integrated skills approach. The coursebook used for the lessons was Speakout Intermediate. Five grammar structures were chosen from the syllabus to work with: First and zero conditionals, second conditional, third conditional and relative clauses. They were chosen in virtue of their complexity and their appropriateness according to the time frame of the

module and the study. In the inductive group, these structures were presented inductively via consciousness-raising tasks adapted from the guided-discovery tasks from the course book by the researcher in order to make them less guided and more inductive. The consciousness-raising task for the third conditional was designed by the researcher. The students in the inductive group worked on these tasks in pairs, trying to discover the rules from the examples provided before any metalinguistic explanations were given. These examples came from the reading texts or listening scripts of the related units from the coursebook which they had just focused on. Later, the instructor gave feedback on the rules that they had discovered and if necessary, corrected them. In the deductive group the rules were directly presented by the teacher after the context was set. Thus, both groups received explicit instruction. The treatment was carried out in four sessions lasting between 45-90 minutes in each group. It lasted for approximately four weeks due to the constraints of the strict syllabus.

After the presentation of each structure, the students in both groups completed a written task in class without any assistance. They had five tasks in total: one written task for the zero and one for the first conditional, one written task for the second conditional, one written task for the third conditional and another written task for the relative clauses. When all the structures were presented and all the writings were completed, they took the same grammar test as the post-test. At the end of the treatment process, a questionnaire was administered to reveal the perspectives of the students in the inductive group on inductive grammar instruction. Subsequently, a semi-structured interview was conducted with the instructor to get an insight into her perspectives on each instructional approach. Figure 4 illustrates the treatment process.

Inductive Group	Deductive Group
Week 1 Pre-test Zero & First Conditional CR Task Writing Task 1 & 2 Week 2 Second Conditional CR Task Writing Task 3 Week 3 Relative Clauses CR Task Writing Task 4 Week 4 Third Conditional CR Task Writing Task 5 Post-Test Questionnaire	Week 1 Pre-test Zero & First Conditional Instruction Writing Task 1 & 2 Week 2 Second Conditional Instruction Writing Task 3 Week 3 Relative Clauses Instruction Writing Task 4 Week 4 Third Conditional Instruction Writing Task 5 Post-Test
Interview with the Instructor	

Figure 4. The treatment process

Data Analysis

First, a normality test was conducted on the data collected from the writings. Some of the data were normally distributed whereas some of it were not distributed normally. The total number of Attempted Use (AU), Correct Use (CU) and Incorrect Use (IU) in each group's written tasks were compared through an independent samples *t* test in SPSS if they were normally distributed. In the cases that they were not normally distributed, they were compared through a Mann-Whitney U test in SPSS. The scores of pre and post-tests in each group and the gain scores of the two groups were calculated. As they were normally distributed, they were compared through an independent samples *t* test in SPSS. The results of the questionnaire were analyzed in terms of frequiencies in SPSS. The interview was transcribed verbatim,

translated to English and analyzed thematically in terms of key themes by the researcher.

Conclusion

In this chapter, detailed information about the setting and participants, the instruments and the data collection procedure were provided. The research design was briefly explained and the data analysis process was concisely introduced. In the next chapter, an in-depth demonstration of the data analysis process will be offered.

CHAPTER IV: DATA ANALYSIS

Introduction

The present study set out to investigate the effects of inductive grammar instruction and deductive grammar instruction on written production, i. e. grammar accuracy in writing tasks, and on grammar test scores. Additionaly, the perspectives of the teacher and the students were analyzed. In this chapter, the data analysis process will be described in detail.

Data Collection Procedures

In this quasi-experimental study, the participants were 38 Intermediate level students who were enrolled in the preparatory English program in the School of Foreign Languages of Anadolu University. There were 19 students in both the inductive group and the deductive group. Before the treatment, both groups took the pre-test on the chosen target structures. During the treatment process, the inductive group received inductive grammar instruction whereas the deductive group received deductive grammar instruction on the chosen structures for approximately four weeks. After each structure was presented, they wrote a writing task that required the use of that structure. After the treatment, both groups took the post-test. Consequently, the inductive group filled a questionnaire on perspectives on the approach. Finally, the teacher who conducted the treatment was interviewed regarding her perspectives.

Data Analysis Procedures

The writing tasks were analyzed and the instances of attempted use, correct use and incorrect use were counted. In order to see the difference between the experimental group and the control group, the data were entered into the Statistical Package for Social Sciences 20 (SPSS). First, a normality test was run. Some of the data was normally distributed whereas the rest was not distrubuted normally. As a result, the normally distributed data were analyzed through an independent samples *t* test. A Mann Whitney U test was run for the data that were not distributed normally. The scores of the pre-test and the post-test were calculated out of 28,which means each correct item brought 1 point. The scores of the pre and post-test of both groups were compared within themselves through paired samples *t* test to see the effect of the treatment. The pre and post-tests and gain scores of both groups were compared through independent samples *t* test to analyze whether there was a statistically significant difference. The results of the questionnaire were entered into SPSS and analyzed in terms of frequencies and percentages. The interview with the teacher was transcripted verbatim and analyzed thematically. Four key themes were elicited. The results are reported in accordance with the research questions of the study.

Research Question 1: Grammar Accuracy in Writing Tasks

The Effects of Inductive Grammar Instruction on the Accuracy of Conditionals and Relative Clauses in Writing Tasks

The numbers of attempted uses, correct uses and incorrect uses in the writing tasks of the inductive group is presented below in Table 2.

Table 2

Numbers of Use In the Writing Tasks of the Indıctive Group

Writing Task	0 Conditional 1st Task			1st Conditional 2nd Task			2nd Conditional 3rd Task			Relative Clause 4th Task			3rd Conditional 5th Task		
Participant	AU1	CU1	IU1	AU2	CU2	IU2	AU3	CU3	IU3	AU4	CU4	IU4	AU5	CU5	IU5
1	5	2	3	1	1	0	1	1	0	6	2	4	6	1	5
2	6	6	0	2	2	0	1	1	0	2	2	0	2	2	0
3	4	3	1	4	3	1	2	2	0	2	1	1	4	3	1
4	3	2	1	4	3	1	1	1	0	3	0	3	-	-	-
5	4	3	1	6	5	1	-	-	-	6	4	2	-	-	-
6	4	3	1	5	3	2	2	0	2	2	1	1	2	2	0
7	7	6	1	5	4	1	3	3	0	2	2	0	0	0	0
8	4	2	2	2	2	0	1	1	0	4	1	3	2	2	0
9	2	0	2	3	3	0	-	-	-	4	4	0	-	-	-
10	2	2	0	3	2	1	1	1	0	1	0	1	2	0	2
11	3	2	1	2	2	0	2	2	0	2	1	1	1	0	1
12	4	4	0	5	5	0	2	2	0	3	2	1	1	1	0
13	6	5	1	4	4	0	1	1	0	2	1	1	2	2	0
14	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
15	3	3	0	3	3	0	-	-	-	2	0	2	-	-	-
16	5	5	0	3	3	0	-	-	-	3	2	1	3	3	0
17	5	5	0	1	1	0	-	-	-	3	1	2	1	1	0
18	3	3	0	4	4	0	-	-	-	-	-	-	-	-	-
19	-	-	-	3	1	2	1	1	0	4	3	1	1	1	0
Total	72	57	15	60	51	9	18	16	2	51	27	24	27	18	9

AU: Attempted Use, CU: Correct Use, IU: Incorrect Use

Table 2 illustrates the results of the writing tasks of the inductive group. The total amount of attempted use of the first conditional in the first writing task is 72, while 57 of these attempted uses are correct and 15 of them are incorrect. In other words, 79% percent of the attempted use is correct whereas 21% percent is incorrect. The participants attempted to use the first conditional 60 times in the second writing task. They had 51 correct and 9 incorrect uses. As a result, 85% of the uses is correct while 15% of the uses is incorrect. It is clear from Table 2 that there were less

participants for the third writing task and these participants had less attempts to use the second conditional in its full form compared to the other target structures. They had 18 attempted uses, 16 of which are correct and 2 of which are incorrect. Namely, 89% of the uses is correct and 11% is incorrect. In the fourth writing task, which required the use of relative clauses, the participant attempted to use the relative clauses 51 times. Twenty-seven of these attempts are correct and 24 are incorrect. In other words, about 53% of the attempts are correct and 47% are incorrect. It is clear from the results that relative clauses were the target structure that the participants had the most difficulty in producing. Finally, the results of the fifth writing task, which required the use of the third conditional, are presented. There are 27 attempted uses in total, 18 of which are correct and 9 of which are incorrect. This means that 67% of the uses is correct and %33 is incorrect.

The Effects of Deductive Grammar Instruction on the Accuracy of Conditionals and Relative Clauses in Writing Tasks

The numbers of attempted uses, correct uses and incorrect uses in the writing tasks of the deductive group is presented below in Table 3.

Table 3

Numbers of Use In the Writing Tasks of the Dedıctive Group

Writing Task	0 Conditional 1st Task			1st Conditional 2nd Task			2nd Conditional 3rd Task			Relative Clause 4th Task			3rd Conditional 5th Task		
Participant	AU1	CU1	IU1	AU2	CU2	IU2	AU3	CU3	IU3	AU4	CU4	IU4	AU5	CU5	IU5
1	-	-	-	0	0	0	1	1	0	-	-	-	2	1	1
2	6	1	5	7	4	3	3	3	0	-	-	-	2	0	2
3	9	5	4	6	3	3	6	2	4	-	-	-	-	-	-
4	4	4	0	1	1	0	1	1	0	1	0	1	-	-	-
5	2	2	0	2	1	1	-	-	-	-	-	-	-	-	-
6	6	3	3	5	3	2	3	3	0	2	2	0	-	-	-
7	4	4	0	1	1	0	-	-	-	0	0	0	-	-	-
8	6	3	3	6	5	1	3	3	0	4	1	3	-	-	-
9	3	3	0	1	1	0	1	0	1	3	1	2	-	-	-
10	4	4	0	3	3	0	-	-	-	-	-	-	-	-	-
11	1	0	1	4	3	1	2	1	1	1	1	0	-	-	-
12	1	1	0	0	0	0	-	-	-	1	1	0	-	-	-
13	6	6	0	3	3	0	3	3	0	3	1	2	2	2	0
14	6	5	1	5	3	2	7	6	1	-	-	-	-	-	-
15	5	3	2	4	3	1	2	2	0	6	1	5	3	3	0
16	2	2	0	3	2	1	2	2	0	3	0	3	3	1	2
17	5	5	0	3	3	0	2	1	1	-	-	-	-	-	-
18	5	2	3	4	4	0	4	2	2	5	2	3	-	-	-
19	7	4	3	7	5	2	5	5	0	4	2	2	-	-	-
Total	82	57	25	65	48	17	45	35	10	33	12	21	12	7	5

AU: Attempted Use, CU: Correct Use, IU: Incorrect Use.

As seen in Table 3, in the first writing task, the participants of the deductive group attempted to use the zero conditional 82 times. They used it 57 times correctly and 25 times incorrectly. Consequently, they had 70% correct use and 30% incorrect use. In the second writing task, the participants in the deductive group had 65 attempted uses of the first conditional, 48 of which is correct and 17 of which is incorrect. Therefore, 74% of the uses is correct and 26% is incorrect. The total number of attempted use of the second conditional in the third writing task for the

deductive group is 45, with 35 correct and 10 incorrect uses. In other words, 78% of the uses is correct and 22% is incorrect. It is clear from Table 3 that the participants in the deductive group used the relative clauses 33 times in total in the fourth writing task, 12 times correctly and 21 times incorrectly. This is the only instance in which the number of incorrect uses is higher than the number of correct uses. While 64% of the uses is incorrect, only %36 is correct. The fifth writing task of the deductive group has the least participants and therefore the least number of uses. Of the total number 12 uses, 7 are correct and 5 are incorrect. Namely, 58% of the uses is correct and %42 percent is incorrect.

The Comparison of the Inductive Group and the Deductive Group

First of all, a normality test was run for all the correct uses and incorrect uses. The numbers of correct use of the first writing task, the second writing task and the fifth writing task were normally distributed for both groups, so they were compared through an independent samples *t* test. The other variables were not normally distributed for both groups, so they were compared using Mann-Whitney U test. The numbers of attempted use were not compared since they were not relevant to the research question. Table 4 presents the comparison of the two groups in terms of correct and incorrect uses.

Table 4

The Mann-Whitney U and Independent Samples t-test Comparison of Both Groups

Use			**T- test**		
	x̄	*SD*	*df*	*t*	*p*
CU1					
inductive	3.17	1.689	34	.000	1.000
deductive	3.17	1.618			
IU1	.83	.857			.673[1]
inductive	1.39	1.685			
deductive					
CU2					
inductive	2.83	1.249	35	.673	.505
deductive	2.53	1.504			
IU2					.327[1]
inductive	.50	.707			
deductive	.89	1.049			
CU3					.075[1]
inductive	1.33	.778			
deductive	2.33	1.589			
IU3					.200[1]
inductive	.17	.577			
deductive	.67	1.113			
CU4					.245[1]
inductive	.59	1.228			
deductive	1.00	.739			
IU4					.647[1]
inductive	1.41	1.121			
deductive	1.75	1.603			
CU5			16	-0.27	.979
inductive	1.38	1.044			
deductive	1.40	1.140			
IU5					.387[1]
inductive	.69	1.437			
deductive	1.00	1.000			

As you can see from Table 4, none of the writing tasks demonstrate a statistically significant difference between the inductive group and the deductive group. Therefore, the effects of the inductive approach and the deductive approach

on grammar accuracy in writing tasks do not demonstrate a statistically significant difference.

Research Question 2: The Comparison of the Pre and Post-test Scores

The Results of the Pre-test

The comparison of the pre-test scores of the two groups is presented below in Table 5.

Table 5

Comparison of the Grammar Pre-test Scores of the Inductive Group and the Deductive Group

Scores			**T- test**		
	$\bar{x}$	*SD*	*df*	*t*	*p*
Inductive	21.13	3.944	30	-1.143	.262
Deductive	19.47.	4.244			

An independent samples *t* test was conducted to compare the pre-test scores of the inductive group and the deductive group. The results suggest that (see Table 5) there was not a statistically significant difference between the inductive group ($\bar{x}$ = 21.13, *SD* = 3,94) and the deductive group ($\bar{x}$ = 19.47, *SD*= 4.24) in terms of the knowledge of the target structures before the treatment.

The Effects of Inductive Grammar Instruction

Table 6 illustrates the effect of inductive instruction on grammar test scores through a paired-samples *t* test.

Table 6

The Paired-Samples T-test of the Inductive Group

Scores			**T- test**		
	x̄	*SD*	*df*	*t*	*p*
Pre-test	*21.13*	3.944	14	-1.675	.116
Post-test	*22.93*	3.515			

As shown in Table 6, a paired-samples *t* test was run in order to see the effects of the inductive grammar instruction on the grammar test scores. Although there was a slight difference in the scores of the pre-test ($\bar{x}$ = 21.13, *SD* = 3.94) and the post-test ($\bar{x}$ = 22.93, *SD*= 3.52) in the inductive group, it was not statistically significant. The scores increased slightly in the post-test.

The Effects of Deductive Grammar Instruction

In order to explore the effects of deductive grammar instruction on the test scores, a paired-samples t test was conducted. The results are illustrated in Table 7.

Table 7

The Paired Samples T-test of the Deductive Group

Scores			**T- test**		
	x̄	*SD*	*df*	*t*	*p*
Pre-test	19.47	4,244	16	-2.176	.045
Post-test	20.94	3,960			

As shown in Table 7, there was a statistically significant difference between the scores of the pre-test ($\bar{x}$ = 19.47, *SD* = 4.24) and the post-test ($\bar{x}$ = 20.94, *SD* = 3.96) at $p < .05$ level ($t(16) = -2,18$). The results indicate that there was a slightly significant increase in the test scores following deductive grammar instruction in the control group.

The Results of the Post-test

Table 8 presents the post-test scores of the experimental group and the control group. Again, there are 15 participants in the inductive group and 17 participants in the deductive group.

Table 8

The Grammar Post-test Scores of the Inductive Group and the Deductive Group

Participants	Inductive Group	Deductive Group
1	22	15
2	21	15
3	26	24
4	23	22
5	23	24
6	25	22
7	24	20
8	24	26
9	20	21
10	26	18
11	18	19
12	26	14
13	25	18
14	27	27
15	14	25
16		24
17		22

In order to examine the difference between the post-test scores of the two groups, an independent samples *t* test was conducted. Table 9 illustrates the results.

Table 9

The Independent Samples T-test Comparison of the Grammar Post-test Scores of the Inductive Group and the Deductive Group

Scores			**T- test**		
	$\bar{x}$	*SD*	*df*	*t*	*p*
Inductive	22.93	3.415	30	-1.496	.145
Deductive	20.94.	3.960			

As shown in Table 9, whereas the post-test scores of the inductive group ($\bar{x}$ =22.93, *SD* = 3.42) is higher than the deductive group ($\bar{x}$ =20.94, *SD* = 3.96), they do not demonstrate a statistically significant difference.

Following the analysis above which indicated the lack of a statistically significant difference, the gain scores (the difference between pre-test and post-test scores) of the inductive group and the deductive group were compared through independent samples *t* test. The results are demonstrated below in Table 10.

Table 10

The Independent Samples T-test of the Gain Scores of the Inductive Group and the Deductive Group

Scores			**T- test**		
	x̄	*SD*	*df*	*t*	*p*
Inductive	1,80	4,161	30	-.216	.830
Deductive	1.53	2.875			

Table 10 indicates that there is not a statistically significant difference between the gain scores of the inductive group (x̄ = 1.80, *SD*= 4,16) and the deductive group (x̄ =1.53, *SD*= 2.88), although the gain score of the inductive group is slightly higher (x̄ difference = -.2,7).

Research Question 3: The Students' and the Instructor's Perspectives On Inductive Grammar Instruction

The Students' Perspectives

A 10-item questionnaire designed in a 5 point likert scale ranging from '1' representing *strongly disagree* to '5' representing *strongly agree* (see Appendices D and E) were distributed to the students in the inductive group to examine their perspectives on inductive grammar instruction. 14 participants answered the questionnaire. Four of the questions were reverse items, so the reverse-scoring averages of questions 1-7 and 2-8 were calculated. Questions 6 and 10 were considered to be almost identical after the questionnaire was conducted so their

averages were also taken. Items 3, 4, 5 and 9 were calculated individually. The data were entered into the SPSS and the frequencies and percentages were analyzed. Table 11 illustrates the results. Items1-7, 2-8, and 6-10 have been combined to make three items.

Table 11

Student Perspectives on Inductive Learning

Inductive Group (n=14)						
Frequency Times (n=14) and Percentages						Average Likert Scale
Question Items	1	2	3	4	5	
1.Trying to discover grammar rules from examples is easy.	-	-	(5) 35.7%	(9) 64.3%	-	3.6
2. Trying to discover grammar rules from examples is fun.	-	-	(5) 35.7%	(8) 57.1%	(1) 7.1%	3.7
3. Trying to discover grammar rules from examples makes me understand better.	-	(1) 7.6%	-	(11) 84.6%	(1) 7.6%	3.9
4. Discovering grammar rules from examples increases my interest in learning grammar.	(1) 7.6%	(2) 15.3%	-	(10) 76.9%	-	3.5
5. Discovering grammar rules from examples increases my self-confidence in terms of learning grammar.	(1) 7.1%	(1) 7.1%	(6) 42.8%	(6) 42.8%	-	3.2
6. Discovering grammar rules from examples is a more effective method.	(1) 7.1%	(2) 14.2%	(6) 42.8%	(4) 28.5%	(1) 7.1%	3.1
7. I'd like to continue discovering grammar rules from examples.	(1) 7.1%	(1) 7.1%	(6) 42.8%	(6) 42.8%	-	3.2

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree

It is clear from Table 11 that most of the students thought trying to discover grammar rules from examples was easy. 65% of the students agreed with the statement and 35 % was neutral. The average likert scale of the first item is 3.6. This shows that the students agreed that inductive learning is easy. The second item defined inductive learning as fun, with which 7 % of the students absolutely agreed and 57% agreed. Around 35% of the students stated they were neutral. The average likert-scale of this item is 3.7. Thus, the students agreed that they enjoyed the experience of inductive learning. According to the answers of the 3rd item in the questionnaire trying to discover the grammar rules helped almost 93% of the students understand the rules better while 7% (only one of them) disagreed to this statement. The average likert-scale of this item is 3.9; which means that the participants agreed with the statement. As shown in Table 13, 76% of the students agreed that trying to discover grammar rules from examples increased their interest in grammar whereas the rest disagreed. The average likert-scale is 3.5, which shows that the participants agreed with this statement as well. The 5th item stated that inductive learning increased the students' confidence in grammar. It can be seen that about 43% of the students agreed with this while 43% was neutral and the rest disagreed. The average likert-scale of this item is 3.2. This shows that the participants were neutral in this respect. About 35% of the students considered inductive learning a more effective method than the traditional whereas about 21% didn't and 43% was neutral. The average likert-scale is 3.1 for this statement. Thus, the participants were neutral to this statement. Finally, around 43% of the students would like to continue trying to discover grammar rules from examples, another 43% were undecisive and the rest didn't want to continue. The average likert-scale of this item is 3.2; which means that the participants were neutral. The results of the questionnaire imply that most of the

students generally held positive attitudes towards inductive learning, though they were not enthusiastic to continue with it. The probable reasons for this reluctancy will be discussed in the next chapter.

The Instructor's Perspectives

The instructor who conducted the treatment was interviewed regarding her perspectives on inductive grammar instruction and deductive grammar instruction, which are the two types of instructional approaches she employed during the treatment process. The interview was in Turkish so that the instructor felt more comfortable and expressed her thoughts more effectively. Ten questions were asked in total. The interview was transcribed verbatim and analyzed thematically. Four key themes/issues were observed by the researcher while reading the script:

Inductive teaching as a more interactive method. The instructor were asked whether she enjoyed adopting inductive and deductive grammar instruction. Her answers revealed that she considered inductive teaching as more enjoyable, however, depending on the wilingness to participate on the part of the students. She defined deductive teaching as a less interactive, therefore, less enjoyable method. She added that it is always better to interact with the students, keep them adapted to the class and have them participate in the lesson, enable them to discover the rules from examples and take an active role in their own learning.

"In the deductive method, I just talk, and they just listen. Therefore, there isn't an enjoyable or interactive atmosphere."

Inductive teaching with motivated students. One of the questions inquired which one of the two approaches the instructor generally adopted in her teaching practices. Her answer was in favour of inductive instruction. However, it also

appeared that the instructor considered some conditions necessary before deciding to adopt inductive instruction. She emphasized the importance of the charateristics of the class. She emphasized that for inductive instruction to be effective, the students needed to participate in the lesson and answer her questions. Therefore, with less motivated and less interested students, deductive method worked better.

"Frankly, I use 'inductive' [method] with students who are more motivated, more willing to learn."

Inductive teaching for new structures. The instructor stated that inductive grammar instruction were especially suitable for new structures which students haven't been introduced to before.

" I like confusing the students by asking questions about an example and then enlightening them – especially if they don't know the structure – as I think they will learn it better".

Less practical and requires more time and effort. The instructor identified deductive teaching as more practical and stated that it needed less effort on the part of the teacher. In the inductive method, the guided-discovery process including the consciousness-raising tasks and the inquiry method required her to work more closely with the students, requiring more effort. However, she felt that during inductive grammar instruction, she was more in control of the teaching process as she was able to see what they already knew and what they needed to learn. As a result, it was easier. She also stated that inductive grammar instruction required more time, especially because of the conciousness-raising tasks which allowed the students to work in pairs and help each other while trying to discover the language patterns. In addition, she thought the question-answer technique was time-consuming.

"Deductive [method] should be more practical. Because you just give the rules… You're not tiring yourself out, or the students."

"During the guided-discovery activities, I gave them time, especially to work in pairs. In this process, they helped each other, they commented to each other. They revealed what they knew or didn't know to each other. That time was given for these."

The results of the interview show that the instructor perceives inductive grammar instruction as a more interactive and enjoyable type of approach although it takes more time and effort. However, she states two conditions as crucial in deciding to adopt inductive instruction: The first one is that the students need to be motivated and willing to participate. The second one is that the structure should be new for the students.

Conclusion

In this chapter, the results of the writing tasks, pre and post-test, the questionnaire and the interview were analyzed. The independent samples tests run on the writing tasks did not demonstrate a statistically significant difference between the experimental group and control group. However, when analyzed in percentages, the numbers of correct use of the target structures were higher in the experimental (inductive) group. Similarly, the difference in the scores of the pre-test and the post-test of the experimental group and the contol group was not statisticaly significant. Whereas the treatment of the inductive group did not increase the scores of the post-test significantly, the control group's scores showed a significant increase. The results of the questionnaire suggested that the students in the experimental group

generally held positive attitudes towards inductive grammar instruction. Likewise, the instructor who conducted the treatment was in favor of the inductive approach.

The next chapter will present the discussion of the results, limitations, pedagogical implications, and suggestions for further research.

CHAPTER V: CONCLUSION

Introduction

The present study aimed to investigate the effects of inductive grammar teaching and deductive grammar teaching on written production, i. e. grammar accuarcy in writing tasks, and grammar tests, as well as the students' and teachers' perspectives on these approaches. It particularly inquired whether there was a significant difference between the inductive approach and the deductive approach regarding the aforementioned aspects. The present study was conducted with 38 Intermediate (B1.2) level students enrolled in a Turkish university English preparation program. In order to compare the effects of inductive grammar instruction and deductive grammar instruction, two classes were assigned as an experimental group and a control group. While the experimental group received inductive grammar instruction through grammar consciousness-raising tasks, the control group was taught in a teacher-centered and traditional deductive manner. After the presentation of each target structure, both groups were given a writing task in line with the first research question. In order to answer the second research question, one grammar test was administered to both groups before and after the treatment. After the treatment, a perspective questionnaire was given to the inductive group, whereas the instructor who conducted the treatments was interviewed by the researcher. These provided the data for the third research question.

The writing tasks, the pre-post test and the perspective questionnaire were analyzed quantitatively through the Mann-Whitney U and Independent Samples t-

test, paired-samples t-test and frequencies and percentages in SPSS. The interview with the teacher was analyzed qualitatively through thematic analysis.

This chapter consists of four main sections. In the first section, the findings of the present study will be discussed referring to the literature. In the second section, the implications of the study will be offered. In the next section, the limitations of the study will be presented and in the final section, suggestions for future research will be given.

Discussion of the Findings

The Effects of the Instructional Approach on Grammar Accuracy in the Writing Tasks

In the present study, after each target structure was presented, both the inductive group and the deductive group were assigned with a writing task which required the use of the target structure. The purpose of these writing tasks was to explore whether one type of grammar instruction produced better results in terms of grammar accuracy in written production compared to the other. The participant quantity was different for each writing task. There were five writing tasks in total. For each writing task, the numbers of correct use and incorrect use of the target structure were counted. When entered into SPSS, none of the writing tasks demonstrated a significant difference between the inductive group and the deductive group (see Table 4). However, the percentages of correct use were slightly higher in all writing tasks of the inductive group (see Table 5). These findings support the results of the previous studies which focused on the effects of inductive and deductive grammar instruction on writing. The lack of a statistically significant difference between the two approaches regarding grammatical accuracy in writing tasks is parallel with the findings of Vogel's research (2010). She compared the

results produced by a guided-inductive approach and a deductive approach to teaching grammar through cultural representations. Apart from a pre and post-test and a delayed post-test on grammar, the participants in Vogel's study were presented with eight open-ended writing tasks. Their performance on the accuracy of the targeted stuctures in writing did not differ significantly between the two approaches. The paired samples *t* test demonstrated no statistically significant difference between conditions. Whereas guided-inductive approach was more effective in the short term in grammar performance, both approaches were effective in the long term. The insignificant findings of the present study and Vogel's (2010) study on written production are also in line with those of Yuen Ho Yan's (2009). According to the results of an ANOVA test, there is no significant difference between the inductive group or the deductive group in her study regarding grammar accuracy in writing tasks in the long term or short term. The present study focused solely on short term grammar accuracy in writing tasks. In contrast to Yuen Ho Yan's findings, inductive grammar instruction brought slightly better results in the short term. However, parallel to Yuen Ho Yan's overall results, the difference between the written grammar accuracy of the groups instructed by these approaches was not statistically significant. There was not a statistically significant difference in the amounts of correct use and incorrect use in any of the five writing tasks between the groups (see Table 4). Several explanations might be given for this result. This lack of a significant difference might be due to the fact that both the inductive group and the deductive group had a moderate amount of previous knowledge of some of the target structures, as can be seen from the pre-test results (see Table 6). The participants' similar amount of previous knowledge might have caused the lack of a significant difference (Dotson, 2010). As the instructor who conducted the treatment suggested

in the interview, the effects of inductive method might be observed better with completely new structures. The fact that both approaches were explicit could be another reason for this result. The students were ultimately presented with the rules in both the deductive and inductive group. This situation might have caused similar levels of learning. The lack of a significant difference in the written production of the target structures might also be due to the limited time frame of the treatments, which lasted for approximately four weeks. Four weeks might not have been adequate to reflect the effects of a particular teaching approach. Furthermore, the quantity of the writing tasks might not have been adequate to reveal clear results. The total number of the writing tasks collected for this study was 148. The analysis of the writing tasks could have brought more important results if there had been more papers. Furthermore, the length of the writing tasks, as well as their voluntary nature, might have been a factor. Although the students were asked to write a paragraph of about 250-300 words for each writing task, they wrote a lot less. There might not be enough writing to demonstrate significant results. Moreover, as the participants knew they were not to be graded for these tasks, they may not have paid enough attention to their grammar usage.

The Effects of the Instructional Approach on Grammar Test Scores

In relation to the second research question, both the inductive group and the deductive group in the present study were given a pre-test before the treatment and an identical post-test after the treatment. It consisted of 28 multiple choice questions focusing on both the meaning and the form of the target structures. The pre-test scores of the inductive and deductive group did not show a statistically significant difference (See Table 5). The mean of the pre-test scores of the inductive group was 21.13, while the mean of the the pre-test scores of the deductive group was 19,47.

Thus, both groups already had some knowledge of the target structures. Yet, their amount of knowledge was nearly identical. The score of the inductive group increased only slightly for the inductive group in the post-test ($\bar{x}$ = 22.93, *SD*= 3.52), and this increase was not statistically significant. In the deductive group, although the increase in the mean score from the pre-test to the post-test was small ($\bar{x}$ = 20.94, *SD* = 3.96), it was statistically significant at p< .05 level (t(16)= -2,18). When the post-test scores of the two groups were analyzed comparatively through independent samples *t* test, although the mean score of the inductive group was higher ($\bar{x}$ =22.93, *SD* = 3.42) than the deductive group ($\bar{x}$ =20.94, *SD* = 3.96), the difference was not statistically significant. Furthermore, the gain scores of the inductive group ($\bar{x}$ = 1.80, *SD*= 4,16) and the deductive group ($\bar{x}$ =1.53, *SD*= 2.88) did not demonstrate a statistically significant difference, though the gain score of the inductive group was slightly higher ($\bar{x}$ difference = -.2,7). These results suggest that only the deductive group benefitted significantly from the instruction. Although the inductive group increased their scores from the pre-test to the post-test, this increase was not adequate to be statistically significant. Moreover, the *t* test comparison of the two groups' results of the post-test, as well as their gain scores imply that neither of the two approaches, the inductive and the deductive grammar instruction, proved to be superior than the other. This lack of a significant difference between the effectiveness of inductive and deductive grammar instuction is in line with the findings of some previous research comparing inductive and deductive grammar instruction (Allison, 1959; Thomas, 1970; Hsiao, 1999; Takimoto, 2008; Dotson, 2010; Han, 2012; Jean & Simard, 2013; Tammenga-Helmantel et al., 2014) and the use of consciousness-raising tasks and deductive grammar instruction (Fotos, 1992). Similar to the current study, although the gain score of the inductive group in

Allison's (1959) study was slightly higher, there was no statistically significant difference between the inductive and deductive groups. The inductive group in Thomas's (1970) study improved their vocabulary and reading comprehension significantly better than the deductive group. In grammar and mechanics, the deductive group produced slightly better results although the difference was not significant. The inductive group improved their compositional abilities, though the difference between the two groups was not significant. In the light of these findings, Thomas (1970) decided that the methods were equally effective. Hsiao (1999) compared the effects of inductive, deductive or a combined method and the effects of these approaches based on learning styles; i.e .relationship with field dependent and field independent learners. He found that there was no significant difference between the approaches or their effect on the learning style. Takimoto's (2008) study investigating the effects of deductive and inductive teaching approaches on the acquisition of pragmatic competence revealed no significant difference between these approaches. In Dotson's (2010) study, there was not a significant difference between the guided-inductive and deductive group in terms of short term learning - similar to the current study- although the inductive group significantly improved in the long term. Han (2012) explored the effects of inductive-implicit and deductive-explicit approach in a Turkish university EFL context, which is also the setting of the current study. Her results implied that both approaches were effective and there was no statistically significant difference between the two approaches. However, it should be noted that both the guided-inductive approach and deductive approach in the present study were explicit. The results of Jean and Simard's (2013) study indicated that there was no significant difference between the student gains from inductive approach and deductive approach. Moreover, there was no relationship

between learning gains and learning styles or preferences. Tammenga-Helmantel, Arends and Canrinus (2014) compared the effectiveness of inductive, deductive, implicit and incidental grammar instruction, as well as the effect of complexity of the grammar structure on these instructional approaches. The results did not suggest a statistically significant difference between the approaches. Furthermore, the complexity of the grammar structure had no effect on the effectiveness of the approaches. Fotos's (1992) study comparing the effects of consciousness-raising tasks and traditional grammar teaching also did not demonstrate a meaningful difference between the two approaches. The results of these studies support the finding of the current study that inductive and deductive grammar instruction do not produce meaningfully different results.

The lack of a significant difference between the short term learning of grammar structures through inductive instruction and deductive instruction in the present study might be due to the same factors mentioned in the previous section exploring the research question one: the limited time frame, the review nature of the some parts of the target structures, the fact that both approaches were explicit, the voluntary nature of the pre-post test and the lack of motivation of some of the students.

In contrast to the aforementioned studies, the insignificant result is also in conflict with a large body of research which indicated that one of the approaches produced more effective results compared to the other. The findings from Erlam's (2003) and Mohamed's (2008) study suggested that deductive instruction produced better results. However, the inductive instruction in these studies did not involve explicit grammar instruction. This could have been an important factor in determining the results. A substantial body of literature suggests that explicit and

conscious attention to form is indispensible in grammar learning (e. g. Burgess, 2002; De Keyser, 2003; Reinders, 2010). Kirschner et al. (2006) emphasize that previous educational research suggests minimally guided approaches do not produce as effective results as more guided instructional approaches. Both the inductive and deductive grammar instruction given in the current study involved metalinguistic explanations with conscious attention paid to both form and meaning. This might have led to the similar results produced by both approaches. Chalipa's (2013) study also implied that deductive instruction was more effective in the short term than guided inductive instruction; whereas both methods produced similar results in the long term. The superiority of the deductive instruction in Chalipa's (2013) study might have stemmed from the longer period of treatment the participants received. The treatment in this study lasted for six weeks, with ten sessions on ten grammatical structures. Also, the study had a within-subjects design, which means the same group of participants were provided with both inductive and deductive instruction. This design might have demonstrated the effects of both approaches more clearly, as factors such as personal differences could be eliminated to some point.

The findings of the current study also differ from a large body of research which implied that inductive grammar instruction was more effective than deductive grammar instruction. Herron and Tomasello (1992) and Haight, Herron and Cole (2007) compared the results of guided inductive grammar instruction and deductive grammar instruction in a French course. The guided inductive instruction in these studies did not involve explicit rule explanations. Both studies revealed a significant advantage for guided induction in grammar teaching. This result might be explained by the fact that both the deductive and guided inductive treatments in these studies relied on oral drills and practice. Guided-inductive approach might be more effective

when it is supported by oral drills, as the participants might be more likely to remember the targeted form when they produce it orally. This idea was the basis of the audio-lingual method of the 1960's. Kim (2007) investigated whether an explicit-deductive/individualistic or explicit-inductive/cooperative type of grammar instruction provided better gains. The results of the post-test demonstrated a higher increase in the scores of the explicit-inductive/cooperative group. However, as the inductive-cooperative worksheets designed for this study were given as homework, the process could not have been controlled strictly. Therefore, the success of the inductive group might not have resulted from the treatment. Moreover, their testing procedures were different from those of the current study. While the present study made use of a multiple choice grammar test for testing purposes, Kim (2007) administered grammaticality judgement test and sentence combining test and written sentence-level production tests. The results might have changed if multiple choice tests had been administered. Rokni (2009) replicated Kim's study with some changes. He eliminated the cooperative/individualistic elements of the treatments and he conducted all steps of the guided-inductive treatment in class with a consciousness-raising task. Yet, the results of his study were parallel to Kim's (2007) findings, as the guided-inductive group scored significantly higher than the deductive group in the post-tests. This result could also be tied to the use of grammaticality judgement and sentence combining tests, as in Kim's (2007) study. Vogel, Herron, Cole and York (2011) also found that guided inductive approach resulted in higher test scores in the short term. Regarding long term learning, the results were insignificant. This result might have stemmed from a number of factors. First, the target language was French, which has different characteristics compared to English. Furthermore, there was a within subjects design, so each individual was exposed to

each method. As in Herron's other study (2007) , this might have helped to see the effects of each approach on the same individual clearly. Dăng and Nguyễn (2012) compared direct explicit (deductive) grammar instruction and indirect explicit (inductive) grammar instruction. They observed that the group which received indirect explicit instruction was significantly more successful in terms of analysis of grammar rules and oral proficiency. A possible explanation for this result might be the number of the participants involved in the study. Dăng and Nguyễn (2012) conducted the experiment on 94 eleventh graders. This is a larger sample than the 38 participants used in the current study. A larger number of participants might reflect the effects of inductive or deductive approach more clearly. Moreover, the treatment process in Dăng and Nguyễn' study (2012) lasted for eight weeks. This might be a more effective time frame for an experimental study than four weeks, which was reserved for the current study. Smart (2014) investigated whether the use of corpus in grammar instruction was more useful through guided inductive teaching or deductive teaching. The results implied that corpus-informed grammar instruction brough about better results through guided inductive teaching. This result might be related to the use of corpus. A substantial amount of research comparing consciousness-raising tasks with traditional grammar instruction also suggested that CR tasks were more effective (e. g. Litherland, 1995; Öncü, 1998; Brender, 2002; Amirian & Abbasi, 2014). Litherland (1995) compared the use of problem solving CR tasks in grammar teaching and communicative grammar instruction. The CR tasks were revealed to be more effective. However, the instruction give to the control group of the present study was not communicative. This might have affected the results in Litherland's (1995) study. Öncü (1998) explored in a Turkish EFL context whether grammar consciousness-raising tasks were an effective alternative to traditional teacher-

fronted grammar instruction. The results revealed the CR tasks were more effective. The number of participants in her study was 60, which is nearly two times of the number of participants in the present study. This might have helped reveal the effects of CR tasks more clearly. Brender (2002) explored the effectiveness of teaching articles to ESL students in writing classes using consciousness-raising methods such as problem solving. The control group was not explicitly instructed on articles. The results of cloze tests and writing tasks showed that the experimental group improved their knowledge of articles significantly better than the control group. This situation might resulted from the fact that the control group was not explicitly instructed. Amirian and Abbasi (2014) compared Grammar Consciousness-Raising (GCR) and the Presentation-Practice-Production (PPP) method of grammar instruction, to conclude that GCR tasks were more effective than the PPP method. This finding might be due to the length of the treatment -three months- and the higher number of participants -sixty-two- compared to the current study.

The Students' and the Instructor's Perspectives on Inductive vs. Deductive Grammar Instruction

In order to find out the students' perspectives on inductive grammar instruction, a perspective questionnaire was given to the participants in the inductive group at the end of the treatment. It consisted of 10 items designed in Likert Scale. 14 participants answered the questionnaire. Sixty-five percent of the students labeled inductive learning as easy and 64 percent thought inductive learning was fun. This result might be attributed to the active role that the students took doing the consciousness-raising tasks. During deductive instruction, the students were in the position of listeners. However, while they were working on the consciousness-raising tasks, they were active problem-solvers. Furthermore, almost 93 percent of the

participants reported that trying to discover grammar rules helped them understand the rules better, which is surprising as the results of the written tasks and post-tests showed that the participants in the inductive group did not perform significantly better than the participants in the deductive group. The reason for this perspective might be the higher amount of cognitive work overtaken by the students during inductive instruction. Seventy-seven percent stated that inductive instruction increased their interest in grammar. Forty-three percent of the participants thought inductive learning increased their confidence in grammar. These responses might have been given by the participants who were more successful in discovering the rules correctly. The participants also gave conflicting responses to the statement that trying to discover grammar rules was more effective than the teacher explaining the rules first. Thirty-five percent of the students agreed to this statement whereas 43 percent was neutral, and 21 percent of the participants disagreed. This finding supports the other findings of the present study which indicate that inductive instruction was not significantly more effective compared to deductive instruction. Furthermore, 43 percent of the students stated they would like to continue inductive learning whereas another 43 percent was neutral. The rest didn't want to continue trying to discover grammar rules. Overall, these results indicate that the participants in the inductive group generally had a positive stance towards inductive learning. However, they had conflicting opinions when they were required to compare it to deductive teaching. The majority of the respondents were neutral about which method was more effective. The rest of the participants were divided between inductive and deductive approach. This result might be attributed to the fact that the students are generally more used to the traditional deductive grammar teaching approach. Therefore, their affective filter might be higher when they are taught with

a new approach which requires them to take an active part in their learning. Furthermore, taking an active role during the lesson might require -as well as increase- motivation. Less motivated students might dislike inductive method as it requires effort. However, motivation level might also increase when the students engage in higher congnitive activities such as induction during the lesson. This might have been the case for the participants who preferred inductive learning. Different learning styles also might have been a factor determining the questionnaire results.

The perspectives of students have also been explored in some of the previous studies comparing inductive and deductive grammar instruction. In line with the findings of the current study, Han's (2012) participants performed similarly under inductive instruction and deductive instruction and did not state a strong preference for any of the approaches. However, in contrast to Han's findings, the learning gains and learning preferences of the students have not always been parallel. Thirty-six per cent of the participants in Kim's (2007) study stated that they liked the grammar discovery activities, 40 per cent thought they had learned better with discovery activities and 45 percent liked figuring out the rules before being told about them. Therefore, almost half of the participants had positive perspectives on inductive grammar instruction. Parallel to the results of the current study, average likert scales showed that the students were almost neutral about the superiority of inductive grammar instruction. This is a surprising result as the inductive instruction in Kim's study (2007) was more effective in terms of post-test results. The qualitative results revealed that the students thought discovery activities improved their problem solving skills and creative thinking ability. They also considered inductive instruction to be a student-centered method which enabled them to concentrate fully on the target structures. The results of the post-tests supported these findings as the

inductive group performed significantly better than the deductive grop. Dotson's (2010) study revealed no significant difference between a deductive approach and guided-inductive approach in the short term. In the long term, guided-inductive approach produced better results. Despite this finding, the students stated a preference for the deductive approach. Similarly, the participants in the study of Vogel et al. (2011) study preferred deductive instruction although they performed better under guided-inductive instruction in the long term. Specifically, the students who performed better with guided-inductive instruction preferred deductive instruction. The findings of the current study also show some discrepancy between student perspectives and actual results. 93 per cent of the participants in the present study thought they understood the grammar rules better with inductive instruction. However, their gain scores do not support this statement. Surprisingly, despite the response to the aforementioned item, the students did not find inductive instruction more effective than deductive instruction. This response is parallel to the results, as there is no significant difference between the gain scores of the inductive group and the deductive group. The results of these studies as well as the present study show that although students are aware of some of the advantages of inductive grammar instruction, they usually do not show a strong preference for it. The learning styles of the students, their affective filters and learning habits as well as their background in grammar instruction might be some of the factors that influence these results.

The instructor who conducted both the inductive and deductive treatment was interviewed by the researcher after the treatment. This interview provided important insights for the treatment process. The interview was analyzed thematically. Four key themes were elicited from the analysis. One of the most important themes emerging from the findings was that inductive method was more suitable for

motivated learners, as the inductive approach was useless if the learners did not participate in the lesson. Another important finding was that inductive teaching was more meaningful with completely new structures. The instructor also stated that while the deductive method was more practical and less time-consuming, she preferred the inductive method as it was more interactive

Pedagogical Implications

The findings of the current study imply that there is no significant difference between the results brought by inductive grammar instruction and deductive grammar instruction regarding scores on grammar tests and grammar accuracy in writing in the short term. Although the students generally view inductive grammar learning positively, they have conflicting opinions on which method is more effective. The instructor who conducted the treatment prefers inductive teaching if the structure is new and the students are motivated.

In light of these findings, some pedagogical implications can be stated. Since - acoording to the results of the present study- inductive teaching and deductive teaching do not have significantly different effects, teachers can implement both instruction types in grammar teaching and create a balance between the two approaches. This will bring variety into their classroom practices and help students take a more active part in the lessons. Most of the participants in the current study stated in the questionnaire that the use of consciousness-raising tasks helped them understand the rules better and increased their interest in grammar. Moreover, they found inductive grammar learning easier and more fun. Therefore, implementing inductive instruction in the form of consciousness-raising tasks might create more positive attitudes towards grammar in students. This study might also influence material-development experts to make use of consciousness-raising tasks in

textbooks or self-study grammar books. These tasks can help teacher conduct a more inductive grammar lesson. Furthermore, teachers might be inspired by the current study to use writing tasks as a measure for the learning of the target grammatical structure. Through meaningful and communicative writing tasks, teachers can see whether students can use the target structure accurately in terms of both meaning and structure in written production.

Limitations

The generalisability of the results of the current study is subject to five limitations. To begin with, the time frame of the treatment was only four weeks due to schedule constraints. Four weeks might not be an adequate length of time to observe the effects of different teaching approaches. A limited amount of treatment might hinder the effects of the approaches (Hsiao, 1999; Han, 2012). Furthermore, the sample size was limited to 38 participants. Therefore, the results of this study might not be applicable to the whole population. If there had been more participants, clearer results could have been obtained. Another limitation of this study was that the participants already had some knowledge of the target structures. The review nature of some of the subjects could have hindered the effects of both of the teaching approaches. The date of the post-test was also a limitation. As the post-test had to be administered during one of the last days of the module, the students were not motivated to answer the questions. They may not have paid as much attention as they had paid to the pre-test and this might have affected the results. The low interest level of some of the participants might have also affected all the results. They may not have paid enough attention to the treatment, the testing instruments and the questionnaire employed in this study.

Suggestions for Future Research

The treatment current study was conducted within four weeks. Future studies should be based on a longer time frame in order to see the effects of the approaches more clearly. Furthermore, the number of the participants should be expanded. The present study worked with 38 participants, which might not have been an adequate number to respresent the whole population.

Both the inductive and deductive grammar instructions in these study employed explicit rule teaching. Future studies might compare implicit inductive teaching - without metalinguistic explanations - with explicit deductive teaching.

The current study explored grammar accuracy in written production under inductive teaching and deductive teaching. Grammar accuracy in oral production also needs to be investigated in future research.

Future researchers should also focus on completely new structures in order to see the effects of inductive and deductive teaching more clearly. As inductive grammar instruction is based on rule and meaning discovery activities, working on completely new structures will be more meaningful.

The participants involved in this study were tertiary level learners. Rivers (1975) suggests that inductive instruction might be more suitable for younger learners. Therefore, researchers might also consider working with younger learners. Furthermore, the participants of the current study were intermediate level learners. Future researchers can focus on lower level learners to see the effects of inductive instruction on learners with less experience of the target language.

Learners rely on their own cognitive processes and take an active role in their own learning process in inductive instruction. Therefore, the effects of inductive

instruction on learner autonomy and motivation also needs to be explored, as the researcher did not come across such studies while conducting her research.

Conclusion

The present study set out to determine the effects of inductive grammar instruction and deductive grammar instruction on grammar accuracy in writing tasks as well as grammar test scores. It also aimed to explore the students' and the teacher's perspectives on these approaches. The findings revealed that the effects of inductive and deductive approaches did not differ significantly. Furthermore, although the students viewed inductive grammar learning positively, only a small portion of them preferred it over traditional deductive instruction. The teacher who conducted the treatment preferred inductive instruction, as long as the students were motivated and the structures were new.

The findings of this study is parallel to a body of previous research which did not observe any significant difference between the results brought by inductive and deductive grammar instruction (Allison, 1959; Thomas, 1970; Hsiao, 1999; Takimoto, 2008; Yuen Ho Yan, 2009; Dotson, 2010; Jean and Simard, 2013; Tammenga-Helmantel et al., 2014).

Although the current study had limitations, it might inspire teachers and material designers to adopt a balanced approach in grammar teaching. They might create a blend of inductive and deductive approaches in their teaching practices and materials.

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APPENDICES

Appendix A: Guidelines for the Treatment

1- Deductive Instruction

- Before the treatment, the pre-test will be administered in an exam format. They will be seated in an exam order, and will get no help from any sources such as the teacher, the coursebook or their friends.
- The students will work on the reading or listening texts for the target structures in the course book and do the related activities that are not concerned with the target structure (such as comprehension questions). This is in order to set the context.
- After that, the guided-discovery or other kinds of activities in the course book will be skipped and the students will be presented with the explanations of the meaning and form (the rules) of the target structure directly by the teacher and/or the language bank section on the course book. The teacher will make no attempts to elicit the structure from the students or guide them to discover the rules.
- After the students are presented with the rules and work on the exercises on the course book, they will be given a writing task for a whole lesson. This will be in the format of an exam. They will be seated in an exam order, and will get no help from any sources such as the teacher, the coursebook or their friends.
- The same procedure will be applied for each target structure. However, as

- there are two seperate writing tasks for zero and first conditionals, they will have two written tasks after the presentation.
- A couple of days after the treatment ends, they will be given the post-test, again in an exam format. The post-test and the pre-test is the same.

2- Inductive Instruction

- Before the treatment, the pre-test will be administered in an exam format. They will be seated in an exam order, and will get no help from any sources such as the teacher, the coursebook or their friends
- The students will work on the reading or listening texts for the target structures in the course book and do the related activities such as comprehension questions. No reference to the target structure will be made even if the students ask questions.
- Later, they will be asked to close their coursebooks. They will be given the consciousness-raising tasks specifically prepared for each structure. They can get help from their peers or teacher if they need it. But they will not be explicitly instructed at this point.
- When they complete the tasks, they will first work in pairs to compare their answers and later receive feedback from the teacher. The teacher can make additional metalinguistic explanations for the target structure if she feels the need.
- They will work on the exercises on the coursebook to apply the rules that they have formulated.
- Preferably in the following lesson, they will be given the written tasks in an exam format.

- The same procedure will be applied for each target structure. However, as there are two seperate writing tasks for zero and first conditionals, they will have two written tasks after the presentation.
- A couple of days after the treatment ends, they will be given the post-test, again in an exam format. The post-test and the pre-test is the same.
- After the treatment, they will also be provided with a questionnaire regarding their attitudes for the treatment process.

Some Important Points:

- Group 4 is the inductive group and Group 3 is the deductive group.
- The inductive group will receive only inductive instruction regarding the five target structrues. Accordingly, the deductive group will be provided with only deductive instruction on the five target structures. We are not concerned with how the other structures on the syllabus are delivered.
- It is very important that the other teachers teaching the same class do not teach these five target structures before the treatment.
- The treatment must last for 4 weeks, or at least 3 weeks. Ideally, each target structure must be presented in a different week.

Appendix B: Consciousness-Raising Tasks

Zero and First Conditional Consciousness-Raising Task

A) Look at the four sentences from the programme. Which talk about a general situation (GS) and which talk about a specific/future situation (FS)?

a) When people get angry, they don't know what to do with their anger.

b) When we get there, I'll give you a hammer.

c) If I smash the car to pieces, will I feel better?

d) If people laugh about something, they feel better.

B) Fill in the blanks to complete the rules.

1) Use the zero conditional to talk about a general situation (fact), or something which is always true.

In the zero conditional, we use

If/When+……..+……

2) Use the first conditional to talk about a specific (possible) situation in the future.

In the first conditional, we use

If/When+ …….+……

Second Conditional Consciousness-Raising Task

Pick of the month

My own favourite series this month? *The People Watchers.* Presented by Professor Richard Wiseman and his rather attractive psychologist friends, the show asks some very interesting questions. If no one saw you, would you take something without paying for it? How close to someone would you stand if you didn't know them? It's all good stuff, but maybe the programme could be even better if we heard from more experts. Unfortunately, for most of the series, we only hear Professor Wiseman's voice. And it would also be nice if we had more statistics. Some of the experiments using hidden cameras show only one or two people in action – not enough to make big conclusions about human nature. But overall, this is good TV: light, easy on the eye, and fun.

A) Look at the four underlined sentences above and answer the questions.

1) Do they hear from more experts?

2) Do they have more statistics?

B) Choose the correct alternative:

We use the second conditional to describe a/an *real/unreal* situation.

C) Complete the rules.

1) In the if clause, we use ……..

2) In the result clause, we use …….

3) If we are not sure of the result, we can also use …….

Third Conditional Consciousness-Raising Task

A) Read the sentences below and answer the questions.

1) We wouldn't have become the most imaginative of the animals if we had continued eating only plants.

a) Did we continue eating only plants?

b) Did we become the most imaginative of the animals?

2) If Alexander hadn't written Doctrinale, education would probably have remained the same.

a) Did Alexander write the Doctrinale?

b) Did education remain the same?

3) If Galileo hadn't defended his theories, he would have been a free man, but we wouldn't have understood the science of our universe.

a) Did Galileo defend his theories?

b)Was Galileo a free man?

c) Did we understand the science of our universe?

4) Life would have been totally different if we hadn't invented the steam engine.

a) Did we invent the steam engine?

B) Answer the questions about the sentences above.

1) Do they describe an imaginary situation or a real situation?

2) Do they describe the present or the past?

C) Complete the rules for the third conditional below

1) In the if clause we use *if* + ……..

2) In the result clause we use *would* + ……+ ……..

3) After *not,* the verb is in …… participle. (present/ past)

Relative Clauses Consciousness-Raising Task

A) Read rules 1 and 2 and circle the correct alternatives.

1) Defining/Non-defining relative clauses tell us exactly which thing, person or place we are talking about.

2) Defining/Non-defining relative clauses add extra information to a sentence. They tell us what a thing, person or place is or does. Without the extra information the sentence is grammatically correct/incorrect.

B) Look at the underlined clauses in the sentences below. Which is a defining relative clause and which is a non-defining relative clause?

a) Chad Hurley, Steve Chen and Jawed Karim, <u>who were colleagues</u>, were having problems trying to email a video clip.

b) Youtube was <u>a place where you posted videos.</u>

C) Complete rules with *which, who, where* and *that*.

1) _____ is used to talk about places.

2) _____ is used to talk about people.

3) _____ is used to talk about things.

4) _____ can be used to talk about places, people or things (in defining relative clauses only).

Appendix C: Pre-Post Test

Name:

Group:

Choose the correct answers. You have 25 minutes.

1) If she had come to the meeting yesterday afternoon, she. ... the celebrations afterwards.

a) will join **b)** would join **c)** joins **d)** would have joined

2) According to question 1:

a) She came to the meeting **b)** She didn't come to the meeting

3) There would be a risk of accident if you ... that cable on the floor.

a) would leave **b)** left **c)** would have left **d)** leave

4) According to question 3:

a) There is a risk. **b)** There isn't a risk

5) If it rains this afternoon, I ... at home.

a) will stay **b)** would stay **c)** would have stayed **d)** stay

6) Question 5 talks about

a) a habit/ general fact **b)** a future possibility

7) If you ….. a lot of fast food, you gain weight.

a) eat **b)** ate **c)** will eat **d)** would eat

8) Question 7 talks about:

a) a habit/general fact **b)** a future possibility

9) If this school had a complete multi-media laboratory, learning ... more enjoyable

a) was **b)** will be **c)** would be **d)** would have been

10) According to question 9:

a) There is a complete multi-media laboratory in the school.

b) There isn't a complete multi-media laboratory in the school.

11) If I … very hard for the final exam, I will pass it.

a) studied **b)** will study **c)** study **d)** had studied

12) Question 11 talks about

a) a habit/general fact **b)** a future possibility

13) If you …...her to your party, I would have come with her.

a) had invited **b)** invited **c)** invite **d)** will invite

14) According to question 13:

a) He came to the party with her. **b)** He didn't come to the party with her.

15) If I go on a boat, I always ……sick.

a) will feel **b)** feel **c)** felt **d)** had felt

16) Question 15 talks about

a) a habit/general fact **b)** a future possibility

17) San Francisco, America's most romantic city, has always been a heaven for the artists and writers…… have left at least part of their hearts there.

a) where **b)** who **c)** which

18) The bank….we put our jewellery and other valuables was robbed by a group of professional thieves last night.

a) who **b)** where **c)** which

19) They found the weapon …… was used in the murder.

a) which **b)** where **c)** who

20) I come from the Seattle area, …….many successful companies such as Microsoft and Boeing are located.

a) which **b)** that **c)** where

21) The Goethe Institute, ... is named after the greatest writer in German literature, is respected worldwide as a resource and educational centre.

a) that **b)** who **c)** which

22) All the students ..... have been chosen to participate in the concert should come to the assembly room at 1O a.m. on Saturday.

a) which **b)** where **c)** that

23) The coastal village ..... we spent our holiday was so beautiful that we are planning to go there again next year.

a) which **b)** where **c)** who

24) Thanks to modern technology, people ..... have hearing problems are enjoying improved hearing with the use of hearing aids.

a) which **b)** where **c)** who

25) The belly dance, ... probably originated in Persia, is a popular dance form in Middle Eastern countries.

a) which **b)** that **c)** where

26) Our company has made a video to show us the security procedures ..... we should follow.

a) that **b)** who **c)** where

27) Today's American Indians are descendants of the people ..... discovered and settled in America more than 20.000 years ago.

a) where **b)** who **c)** which

28) In order to reinforce my son's English at school, I am looking for a private teacher ..... can come in the evenings.

a) where **b)** which **c)** that

Appendix D: Öğrenci Görüş Anketi

Sayın Katılımcı,

Bu anket tümevarım yoluyla İngilizce dilbilgisi öğrenimine ilişkin görüşlerinizi değerlendirmek amacıyla hazırlanmıştır. Aşağıda belirtilen her bir madde için, sizi en iyi tarif ettiğini düşündüğünüz kutucuğa 'X' işareti koyunuz. Verdiğiniz her bir doğru yanıt araştırmacıya değerli bilgiler sağlayacaktır. Katılımınız için teşekkür ederim.

Okt. Deniz Emre

Bilkent Üniversitesi MA TEFL Programı

Tümevarım yoluyla dilbilgisi öğretimi, bir dilbilgisi yapısının anlam ve kullanım şeklinin öğretmen tarafından anlatılmadan önce, öğrenciler tarafından örnek cümleler incelenerek ve bu örnek cümlelerle ilgili sorular cevaplanarak keşfedilmeye çalışmasını kapsar. Örn:

B) Look at the underlined clauses in the sentences below. Which is a defining relative clause and which is a non-defining relative clause?

a) Chad Hurley, Steve Chen and Jawed Karim, who were colleagues, were having problems trying to email a video clip.

b) Youtube was a place where you posted videos.

C) Complete rules with which, who, where and that.

1) _____ is used to talk about places.

2) _____ is used to talk about people.

3) _____ is used to talk about things.

4) _____ can be used to talk about places, people or things (in defining relative clauses only)

		Kesinlikle Katılmıyorum (1)	**Katılmıyorum (2)**	**Fikrim Yok (3)**	**Katılıyorum (4)**	**Kesinlikle Katılıyorum (5)**
1	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak kolaydır.					
2	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak eğlencelidir.					
3	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak dilbilgisi kurallarını daha iyi anlamamı sağlar.					
4	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak dilbilgisi öğrenmeye olan ilgimi artırır.					
5	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak dilbilgisi öğrenme konusunda kendime olan güvenimi artırır.					
6	Dilbilgisi kurallarını örneklerden yola çıkarak çalışmayı sürdürmek isterim.					
7	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak dilbilgisi kurallarının öncelikle öğretmen tarafından anlatılmasından daha zordur.					
8	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak dilbilgisi kurallarının öncelikle öğretmen tarafından anlatılmasından daha sıkıcıdır.					
9	Dilbilgisi kurallarını örneklerden yola çıkarak keşfetmeye çalışmak dilbilgisi kurallarının öncelikle öğretmen tarafından anlatılmasından daha etkili bir yöntemdir.					
10	Dilbilgisi kurallarının örneklerden yola çıkarak keşfedildiği dilbilgisi derslerine devam etmeyi tercih ederim.					

APPENDIX E: Student Perspective Questionnaire

Dear Participant,

This questionnaire has been prepared with the purpose of evaluating your perspectives on inductive grammar instruction. For each item stated below, put an 'X' into the box that you think represents you best. Each correct response that you give will provide valuable information to the researcher. Thank you for your participation.

Instructor Deniz Emre

Bilkent University MA TEFL

Program

Inductive grammar instruction involves attempts to discover the meaning and use of a grammatical structure by the students through analysis of example sentences and answering questions related to these example sentences before being given an explanation by the teacher. E. g.

B) Look at the underlined clauses in the sentences below. Which is a defining relative clause and which is a non-defining relative clause?

a) Chad Hurley, Steve Chen and Jawed Karim, who were colleagues, were having problems trying to email a video clip.

b) Youtube was a place where you posted videos.

C) Complete rules with which, who, where and that.

1) _____ is used to talk about places.

2) _____ is used to talk about people.

3) _____ is used to talk about things.

4) _____ can be used to talk about places, people or things (in defining relative clauses only)

		Absolutely Disagree (1)	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Absolutely Agree (5)**
1	Trying to discover grammar rules from examples is easy.					
2	Trying to discover grammar rules from examples is fun.					
3	Trying to discover grammar rules from examples makes me understand the rules better.					
4	Trying to discover grammar rules from examples increases my interest in learning grammar.					
5	Trying to discover grammar rules from examples increases my self-confidence in terms of learning grammar.					
6	I'd like to continue discovering grammar rules from examples.					
7	Trying to discover grammar rules from examples is more difficult than the teacher explaining the rules first.					
8	Trying to discover grammar rules from examples is more boring than the teacher explaining the rules first.					
9	Trying to discover grammar rules from examples is a more effective method than the teacher explaining the rules first.					
10	I prefer to continue grammar lessons in which grammar rules are discovered from examples.					

APPENDIX F: Interview Script

Interviewer: Hi. Thank you for participating in the interview. Your information will be kept confidential and the only purpose of this interview is research. I have ten questions here. I'm starting with the first question. Do you essentially consider yourself as a teacher teaching deductively, that is 'tümdengelim', or inductively, that is 'tümevarım'?

Interviewee: Hi. Actually, depending on the class, I often, in general, choose the inductive, that is, 'tümevarım' way. But, you see, from time to time I use 'deductive' depending on the student profile. But generally speaking I prefer the 'inductive' way. Why? Because I like confusing the students by asking questions about an example and then enlightening them – especially if they don't know the structure – as I think they will learn it better and because it is a more interactive way of teaching, I prefer this way.

Interviewer: OK, you've just mentioned that you make your choice depending on the students. So, with what kind of students, then, do you think we should prefer 'inductive' teaching?

Interviewee: Frankly, I use 'inductive' with students who are more motivated, more willing to learn. Because with other- especially in this study as well, the third group was less interested in the lessons. Therefore 'deductive' worked better.

Interviewer: Yes, let me move to the second question then. Did you enjoy teaching 'deductively' - that is 'tümevarım'-… I'm sorry, did you enjoy teaching 'inductively'? Why? Inductively.

Interviewee: Yes. Yes, I did. As I said, it was a method that I'd already used often. And again, depending on the student profile, there were occasions that I enjoyed it.

Interviewer: So, do you enjoy teaching deductively, that is 'tümdengelim yoluyla'? And why?

Interviewee: Actually if it's a better class, a participating class, a class which likes to talk and answer my questions, it is more sensible to prefer 'inductive'. Because in the deductive [method], I just talk, and they just listen. Therefore, there isn't an enjoyable or interactive atmosphere. Therefore, -actually, we're coming to the same conclusion- in a class that is not really participating, deductive grammar instruction becomes necessary. But can it be enjoyable, really, frankly, I can't say it is enjoyable.

Interviewer: So, which method, do you think, is easier? And, I mean, was easier in this treatment?

Interviewee: Which way of teaching was eaiser…

Interviewer: 'Inductive' or 'deductive'?

Interviewee: Actually, when we think in general terms, 'deductive' is an easier pattern. The reason why?... You give the rules, then you do the examples, you show them…then you want the students to do the exercises. When we look from this perspective, it is an easier method. But with the inductive method, as we took the one-to-one question-answer method, I actually found it easier. Because during the process I was able to have control over them. I was able to see what they wanted and what they knew. Because in 'deductive', without knowing what they know or what

they don't know, you just explain, give examples and it ends. But in 'inductive', by asking questions, you see, we get to learn what they know beforehand.

Interviewer: So, which way of teaching was more practical? 'Inductive' or 'deductive'?

Interviewee: Practical…Deductive [method] should be more practical. Because you just give the rules… You're not tiring yourself out, or the students.

Interviewer: Then let me get to the other question regarding this. Which way of teaching required more effort on your side? On the teacher's side.

Interviewee: Of course 'inductive' requires more effort. Because with the examples I wrote, or with those guided-discovery activities, one-to-one, I mean, all the time, you need to mingle with the students. Or you need to go like question-answer all the time. 'Inductive' requires more effort, frankly.

Interviewer: So, which one required more time, 'inductive teaching' or 'deductive' teaching? For the lesson. For the treatment.

Interviewee: Of course in the 'inductive'. During the guided-discovery activities, I gave them time, especially to work in pairs. In this process, they helped each other, they commented to each other. They revealed what they knew or didn't know to each other. That time was given for these. As we continue with questions and answers afterwards, 'inductive' definitely takes more time.

Interviewer: So, when you take all these factors, pros and cons, into consideration, do you think the students in the inductive group benefitted from the treatment? If yes, why and if no, why not?

Interviewee: Yes, I actually asked this to the students in general as well. So, there were those who said "Yes, it is very good, we've benefitted from it, teacher. We ourselves have tried to find the rules by the examples and this has been better for us. We were more active". But, you see, there were also those who said "Being given examples first, and inducing rules from them was confusing teacher, I couldn't" . There were also those who said "It doesn't matter, teacher". In fact, I got better feedback from the students who participated more in the lesson, who were more interested in English…at the end of the lesson…the research.

Interviewer: So, do you think the students in the deductive group benefitted from this approach?

Interviewee: I mean, benefit… They've learnt the subjects, the 'structures'.

Interviewer: In the end they did learn.

Interviewee: Yes, they did. All in all, they learnt them.

Interviewer: Do you think they gained any other benefits other than learning?

Interviewee: I mean, you see, it is a condition that they have gotten used to. It is also related to our education system. We have always had such an education system. I mean, starting from primary school, we have always been given definitions, and we have always tried to apply them to, er, exercises. Or we tried to write a sentence. It was actually what we had always done. So there wasn't actually any difference for them. They did not see a different approach or a different type of instruction. As always, they've just learnt.

Interviewer: I see. Which instructional approach do you think you will prefer from now on?

Interviewee: I mean, in fact, as I said at the beginning, I always prefer inductive. Especially if they don't know the subject, if it's a new subject for them and if it's a good class, a participating class, 'inductive' is always better. It is always better, to communicate with the students, have them find the rules while telling the subject, adapt them to the classroom or I mean, enabling participation in the class, making them have a role in learning something will always be better.

Interviewer: Alright. Thank you for your answers.

Interviewee: Thank you.

Appendix G: Writing Task Prompts

1) Zero Conditional Writing Task

Choose **one** of the following options and write a paragraph. Be careful about the instructions. You have 45 minutes.

A- What happens when/if people go through a lot of stress? What kind of things cause people to have stress? Write a paragraph of about 250-300 words. Use the zero conditional in your writing.

B- What do you do when/if you are bored? Talk about your free time activities.Write a paragraph of about 250-300 words. Use the zero conditional in your writing.

2) First Conditional Writing Task

Choose **one** of the following options and write a paragraph. Be careful about the instructions. You have 45 minutes.

A- Talk about your plans for the next 10 years. What are some possible problems and how will you solve them? What are some decisions you will make? Write a paragraph of about 250-300 words. Use the first conditional in your writing.

B- If you earn a lot of money in your career, what kinds of things will you do? Write a paragraph of about 250-300 words. Use the first conditional in your writing.

3) Second Conditional Writing Task

Choose **one** of the following options and write a paragraph. Be careful about the instructions. You have 45 minutes.

A- If you created a website, what would it be? What would it's name be, and what would people do there? Write a paragraph of about 250-300 words. Use the second conditional in your writing.

B- If you created a TV programme, what would it be? What would it's name be, and what would you present? Write a paragraph of about 250-300 words. Use the second conditional in your writing.

4) Third Conditional Writing Task

Choose **one** of the following options and write a paragraph. Be careful about the instructions. You have 45 minutes.

A- Think about a mistake or a good decision you made in the past. Think about what would have happened if you didn't make it. Write a paragraph of about 250-300 words. Use the third conditional in your writing.

B-Think about an important event or an important person in history. What would have happened if it didn't happen or the person hadn't been born? Write a paragraph of about 250-300 words. Use the third conditional in your writing.

5) Relative Clauses Writing Task

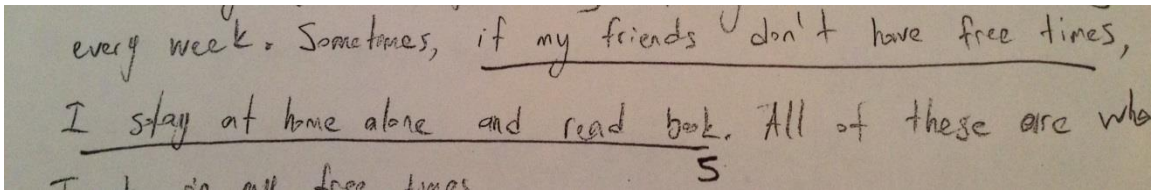
Choose **one** of the following options and write a paragraph. Be careful about the instructions. You have 45 minutes.

A- Describe your hometown using relative clauses. Write a paragraph of about 250-300 words.

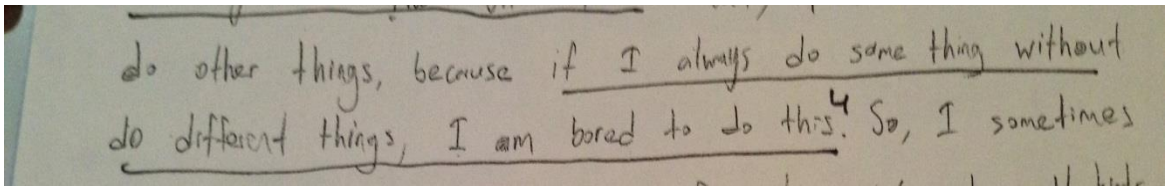
B- Describe a website using relative clauses. Write a paragraph of about 250-300 words.

Appendix J: Writing Analysis Sample

1) Correct Use

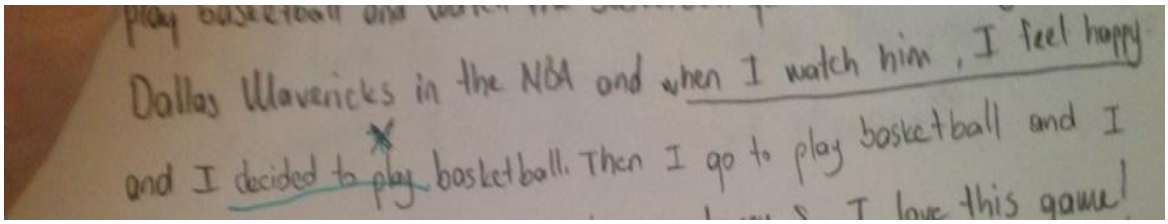


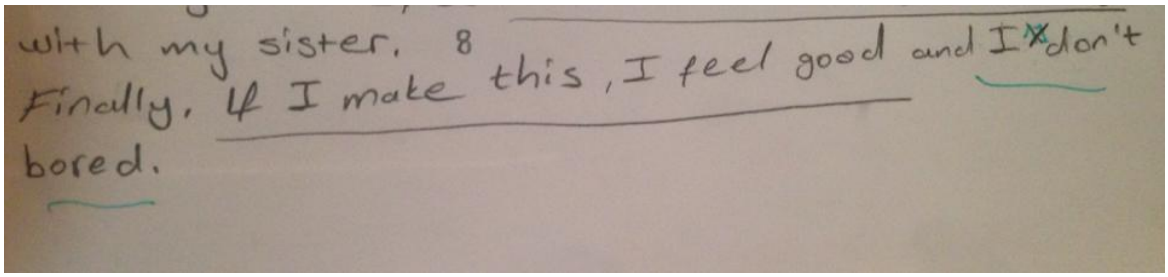
(Mistakes that were not directly related to the target structure were ignored, e.g. 'free times, read book')



(Mistakes that were not directly related to the target structure were ignored, e.g. 'without do, bored to do')

2) One Correct and One Incorrect Use in the Same Sentence





(When there was one correct use and one incorrect use in the same sentence, they were evaluated independently.)