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THE EFFECT OF INDUCTIVE VS DEDUCTIVE INSTRUCTIONAL APPROACH IN GRAMMAR LEARNING OF ESL LEARNERS

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ABSTRACT

Teaching grammar has been a controversial issue for centuries. As grammar learning has main role in language learning, knowing which process and methodology has more effect and impact on grammar learning has more importance. The effectiveness of **deductive** and **inductive** approaches, aiming at maximizing the students' opportunity to practice thinking skills, has been investigated in empirical studies, but which one is more effective and can help students to learn more effectively. The aim of this study is to investigate whether various rule explication techniques should precede or follow a focus on the use of grammatical forms. The researcher framed this study around the following research questions:

1) Which instructional approach, deductive or guided inductive, will be more effective for EFL learners' on short-term learning of grammatical structures?

2) Which instructional approach, deductive or guided inductive, will be more effective for EFL learners' on long-term learning of grammatical structures?

In order to investigate the afore- mentioned questions, a sample population were 40 students .The researcher taught 10 grammar items 5 deductively and5 inductively to the population. The grammar pretest was administered to participants at the beginning of the semester, prior to the treatment phase, in order to assess the comparability of grammar knowledge between the six sections. The grammar posttest was identical to the grammar pretest. At the end of the semester, 6 weeks after the pretest, the grammar posttest was administered to the participants to measure the long-term learning of the grammatical structures as well as the effectiveness of each presentational approach. To analyze the obtained data, a t- test computation was applied, in which the scores obtained for multiple-choice questions were the dependent measure, the data showed that:

1. deductive approach is more effective for EFL learners' on short-term learning of grammatical structures.

2. deductive and guided inductive approach are similar for EFL learners' on long-term learning of grammatical structures.

3. deductive and guided inductive approach are similar for EFL learners' on short-term learning of grammatical structures.

Key word: Inductive, Deductive, Grammar

1. Introduction

Teaching grammar has been a controversial issue for centuries. Some people perceive it as essential to teaching any foreign language (for example those in favor of Grammar Translation Method), whereas others view it as an impediment to second language acquisition. Even experts on language teaching from the past and contemporary linguists like Stephen Krashen, who once said "The effects of grammar teaching... are peripheral and fragile," seem to question the very idea of including grammar lessons in second language teaching. This incessant debate over the usefulness and the form of grammar teaching (and, consequently, of grammar instruction), in which as of yet no one has been able to support their claims with an unquestionably conclusive research, has resulted in plenty of different methods and techniques of formulating grammar instruction, among which two stand out, namely inductive and deductive method. The former is based on the assumption that knowledge of grammatical rules should be acquired through exposure to samples of speech that present a particular construction. Students are to elicit the rule from the given input and subconsciously learn it by recognizing the reoccurring patterns. Proponents of deductive approach to grammar instruction, on the other hand, claim that an introduction of a new structure should be commenced with an

explicit presentation of the rule that governs the structure. The presentation is followed by examples which show to students how the rule is used in context.

Research into language learning has considerably enriched our understanding of the processes that take place in the classroom and the factors that influence them. Most researchers agree that, for optimal learning to occur, students need to exert a conscious effort to learn. Their teachers should activate the students' minds spontaneously and involve them in problem solving and critical thinking (Stoller, 1997). According to Anderson's (1990) cognitive theory, learners are better able to understand details when they are subsumed under a general concept. Anderson further states that the quality of learning depends on how well the basic concept is anchored. In short, greater stability of the basic concepts results in greater learning.

A number of research studies have reported that learners need ample opportunities for communication use so that they can integrate separate structures into given concepts for expressing meanings. Spada & Lightbown (1993) hold that thinking skills operate effectively when students voice their analysis and take part in the learning process occurring in the classroom. Methodologists also argue that learners in the classroom should experience creative reflections through which the teacher probes their understanding to elicit answers for the questions he or she poses. In this way, students can lay the foundations for their internal representation of the target language, which can allow effective learning to function properly (Pica, 1994). Many researchers such as Chaudron (1988) further document the benefits of involving students in the learning process. These investigators found that students taught by teachers who actively involved them in lessons achieved at higher rates than those in traditional classes. As we can see, these two methods are completely different and simultaneous use of both is impracticable. The rift that divides them finds, obviously, reflection in the results that they produce.

The effectiveness of **deductive** and **inductive** approaches, aiming at maximizing the students' opportunity to practice thinking skills, has been investigated in empirical studies. *Deductive* learning is an approach to language teaching in which learners are taught rules and given specific information about a language. Then, they apply these rules when they use the language. This may be contrasted with *inductive* learning in which learners are not taught rules directly, but are left to discover - or induce - rules from their experience of using the language (Richards et al, 1985). Harmer (1989) ascertains that these two techniques encourage learners to compensate for the gap in their second language knowledge by using a variety of communication strategies. What is the most effective approach to teaching grammar in a foreign language classroom? One of the most frequently debated and unanswered questions on the subject of effective language learning concerns the issue of whether students should be taught to focus on the rule before using the structural forms (the deductive approach) or to use the grammatical structures in a functional practice session before the rule presentation (the inductive approach). The aim of this study is to investigate whether various rule explication techniques should precede or follow a focus on the use of grammatical forms. This question was studied by comparing the effectiveness of a traditional deductive instructional approach, which focused on form first, and a guided inductive instructional approach, which focused first to a specific context and meaning.

The researcher framed this study around the following research questions:

1) Which instructional approach, deductive or guided inductive, will be more effective for EFL learners' on short-term learning of grammatical structures?

2. Which instructional approach, deductive or guided inductive, will be more effective for EFL learners' on long-term learning of grammatical structures?

The purpose of the present study was to study and compare the effect of inductive grammar learning vs. deductive grammar learning between EFL learners. Particularly this study attempts to compare inductive grammar learning with deductive grammar learning in order to help EFL learners to learn grammar more effectively and efficiently.

2. Theoretical Background and Literature Review

Research into language learning has considerably enriched our understanding of the processes that take place in the classroom and the factors that influence them. As grammar learning has main role in language learning, knowing which process and methodology has more effect and impact on grammar learning has more importance. Different teachers according to their experiences select different methods for grammar teaching, some select deductive grammar teaching and others inductive grammar teaching. Deductive grammar teaching is based on facts and statements, it is also based on prior logic. Therefore the learners are told the grammatical rule and will work from that, inductive grammar teaching is based on trial and error, experiments. The learners learn from trying different things, seeing what works and what does not through experimenting they figure out the grammatical rules.

Some rely on the students to induce the rule themselves (Rosa & O'Neill, 1999; Shaffer, 1989). Other strategies use guided inductive techniques that focus students' attention on the structure through a series of leading questions (Herron & Tomasello, 1992). Adair-Hauck, Donato, and Cumo-Johanssen's (2005). some researchers (Larsen-Freeman, 2003; Lee & VanPatten,1995) stress the benefits of teaching foreign language grammar with less of a focus on rules and extensive explanations, teaching strategies appear not to have evolved in terms of how grammar is taught. Lee and VanPatten (1995) argue that although language classrooms are becoming more communicative, instructors still are insisting on teaching grammar explicitly, so which one is more effective inductive or deductive, below the main advantages and disadvantages of theses two approaches are discussed.

2.1 Deductive grammar(advantages and disadvantages)

Deductive grammar teaching is based on facts and statements; it is also based on prior logic. Therefore the learners are told the grammatical rule and will work from that. Deductive approach is certainly easier to apply and leaves little room for mistakes providing that the rule is concisely and clearly stated. Eisenstein (1987) suggests that with the deductive approach, learners be in control during practice and have less fear of drawing an incorrect conclusion related to how the target language is functioning. In general the advantages of deductive approach can be summarized as follow:

*It gets straight to the point, and can therefore be time-saving. Many rules — especially rules of form — can be more simply and quickly explained than elicited from examples. This will allow more time for practice and application.

*It respects the intelligence and maturity of many - especially adult -students, and acknowledges the role of cognitive processes in language acquisition.

*It confirms many students' expectations about classroom learning, particularly for those learners who have an analytical learning style.

*It allows the teacher to deal with language points as they come up, rather than having to anticipate them and prepare for them in advance.

It has some quite significant disadvantages that cannot be disregarded. The most important one is lack of students' involvement and struggle for understanding, which may result in the lesson being teacher-centered and not demanding in terms of creativity and imagination. Teacher's incompetence may deteriorate the situation further; if he is unable to state the rule explicitly, back it up with relevant examples and adjust the use of met language to the needs of his students, then even the dimpliest grammar instruction can become ambiguous, and breed confusion and discouragement. In general the disadvantages of deductive approach can be summarized as follow:

*Starting the lesson with a grammar presentation may be off-putting for some students, especially younger ones. They may not have sufficient met language (i.e. language used to talk about language such as grammar terminology). Or they may not be able to understand the concepts involved.

*Grammar explanation encourages a teacher-fronted, transmission-style classroom; teacher explanation is often at the expense of student involvement and interaction.

*Explanation is seldom as memorable as other forms of presentation, such as demonstration.

*Such an approach encourages the belief that learning a language is simply a case of knowing the rules.

2.2 Inductive grammar learning (advantages and disadvantages)

Inductive is known as a 'bottom up' approach. In other words, students discovering grammar rules while working through exercises. Inductive grammar teaching is based on trial and error, experiments. The learners learn from trying different things, seeing what works and what does not. Through experimenting they figure out the grammatical rules. Inductive method can be used solely by an experienced and competent teacher who knows his students well enough to be able to adjust the instruction to their needs and capacities. The superiority of inductive method over deductive one can only be utilized if one has profound insight into teaching techniques and possesses deep knowledge of students' patterns of thinking and approaching new structures. It is also of paramount importance to know when and how to help learners, what can be done to aid them in coming up with a particular rule and how to do that efficiently. An inductive approach comes from inductive reasoning stating that a reasoning progression proceeds from particulars (that is, observations, measurements, or data) to generalities (for example, rules, laws, concepts or theories) (Felder & Henriques, 1995). In short, when we use induction, we observe a number of specific instances and from them infer a general principle or concept. In general the advantages of inductive approach can be summarized as follow:

*Rules learners discover for themselves are more likely to fit their existing mental structures than rules they have been presented with. This in turn will make the rules more meaningful, memorable, and serviceable.

*The mental effort involved ensures a greater degree of cognitive depth which, again, ensures greater memo ability.

*Students are more actively involved in the learning process, rather than being simply passive recipients: they are therefore likely to be more attentive and more motivated. It is an approach which favors pattern-recognition and problem-solving abilities which suggests that it is particularly suitable for learners who like this kind of challenge.

*If the problem-solving is done collaboratively, and in the target language, learners get the opportunity for extra language practice.

*Working things out for themselves prepares students for greater self-reliance and is therefore conducive to learner autonomy. In general the disadvantages of inductive approach can be summarized as follow:*The time and energy spent in working out rules may mislead students into believing that rules are the objective of language learning, rather than a means.

*The time taken to work out a rule may be at the expense of time spent in putting the rule to some sort of productive practice.

*Students may hypothesis the wrong rule, or their version of the rule may be either too broad or too narrow in its application: this is especially a danger where there is no overt testing of their hypotheses, either through practice examples, or by eliciting an explicit statement of the rule.

*It can place heavy demands on teachers in planning a lesson. They need to select and organize the data carefully so as to guide learners to an accurate formulation of the rule, while also ensuring the data is intelligible.

*However carefully organized the data is, many language areas such as aspect and modality resist easy rule formulation.

*An inductive approach frustrates students who, by dint of their personal learning style or their past learning experience (or both), would prefer simply to be told the rule.

2.3 Inductive vs. deductive grammar learning

2.3.1 Teachers' role:

Two very distinct and opposing instructional approaches are inductive and deductive. Both approaches can offer certain advantages, but the biggest difference is the role of the teacher. In a deductive classroom, the teacher conducts lessons by introducing and explaining concepts to students, and then expecting students to complete tasks to practice the concepts; this approach is very teacher-centered. Conversely, inductive instruction is a much more student-centered approach and makes use of a strategy known as 'noticing'.

2.3.2 Meaning-focused instruction vs. form focused instruction:

Research suggests that focusing on form in a communicative language classroom is a more effective technique for teaching grammar than focusing on form alone or focusing purely on communication (Doughty **Q** Williams, 1998a, 1998b; Fotos, 1993; Fotos **Q** Ellis, 1991; Schmidt, 1990). Related to the issue of how best to focus on form in the communicative classroom, theorists question how soon language learners should engage in the actual production of newly explained gram- matical patterns. (For a discussion on input processing's. output-based instruction, see VanPattern, 1996.) The general consensus among professionals in the fields of second and foreign language learning concerning the debate over inductive vs. deductive instructional approaches, the focus of this study, points to an approach that falls somewhere in between the two approaches (Adair-Hauck, Donato, & Cumo-Johanssen, 2005; Felder, 1995; Hammerly, 1975; Larsen-Freeman, 2003; Shaffer, 1989).

2.3.3. Implicit and explicit grammar instruction:

Discussions on inductive and deductive instructional approaches have been linked to theories of implicit and explicit grammar instruction (DeKeyser, 1997; Ellis, 1994; Norris & Ortega, 2000). An explicit approach to teaching grammar features instructor explanations of rules followed by practice exercises (Adair-Hauck, Donato, **Q** Cumo-Johanssen, 2005). On the other hand, an implicit approach to grammar instruction refutes the need for any explicit focus on form, as researchers argue that students can acquire language naturally if exposed to enough comprehensible input (Krashen, 1982; Terrell,1977).

However, it is safe to say that an inductive method involves students more in an *analytical* study of the language than the deductive method does. In addition, from my observation of the lesson in question, this method seems to be highly motivating and extremely beneficial for the students' understanding of the materials presented to them. The

thinking skills that students employed in the inductive model were far more demanding than those used with the deductive model. This observation brings with it the issue of whether or not it requires more experienced and advanced students. Its effectiveness also counts on the teacher as an active leader in guiding students when they process the information. The deductive model, on the other hand, is less open-ended than the inductive model, and, consequently, it sacrifices some of the motivational characteristics inherent in an inductive technique. It seemed to me, from my comparison of the process and the product of the two lessons that the attraction to a sense of the unknown - which is intrinsic within the inductive method - is lost in the deductive model. Hence, it was difficult, sometimes, for the teacher to recapture the attention of the student who had momentarily wandered

3. Design and the methods of the study

The purpose of the present study was to study and compare the effect of inductive grammar learning vs. deductive grammar learning between EFL learners. Particularly this study attempts to compare inductive grammar learning with deductive grammar learning in order to help EFL learners to learn grammar more effectively and efficiently.

The researcher framed this study around the following research questions:

1) Which instructional approach, deductive or guided inductive, will be more effective for EFL learners' on short-term learning of grammatical structures?

2. Which instructional approach, deductive or guided inductive, will be more effective for EFL learners' on long-term learning of grammatical structures?

3.1. Subjects

The subjects of these study were 40-univerity students between 57 university students with regard to these criteria: 1)they were present for at least eight treatment sessions in each condition (ten total),(2) they had immediate test scores on at least eight of the ten structures ,and (3) they were present for both the grammar pretest and posttest. Of these 40 students, 22 were females and 18 were males, and all of them were students of electronic engineering. All of the participants were native Persian speakers and nonnative speakers of English.

3.2. Instruments and procedures

For the experiment, The two different instructional approaches described above were used to teach the chosen ten grammatical structures. The investigators selected these important structures from the course curriculum and taught them in the order in which they occurred in the curriculum. The researchers also chose structures that appeared to lend themselves equally well to both guided inductive and deductive teaching strategies. The analyses of this investigation were based on the following instruments, all designed by the principal investigator.

3.2.1. Background Questionnaire

At the beginning of the semester, students were asked to complete a background questionnaire in order to assess previous language study and other demographic information that might be pertinent to this investigation and its findings.

3.2.2. Grammar Pretest

The grammar pretest was administered to participants at the beginning of the semester, prior to the treatment phase, in order to assess the comparability of grammar knowledge between the six sections. Each item on the grammar pretest consisted of a stem and four multiple-choice responses focusing on one of the ten grammatical structures taught during the treatment phase. The grammar test contained 15 items and possible test scores ranged from 0 to 5 points.

3.2.3. Grammar Posttest

The grammar posttest was identical to the grammar pretest. At the end of the semester, 6 weeks after the pretest, the grammar posttest was administered to the participants to measure the long-term learning of the grammatical structures as well as the effectiveness of each presentational approach. Even though at the time of the pretest, the pretest items were not categorized as having been taught through either the guided inductive or deductive approach, at the end of the semester, the investigators were able to associate individual items on the grammar posttest to the students according to the condition in which they had originally learned the structure, thus making the long-term analysis possible.

3.2.4.Immediate Quizzes

A quiz was administered to the students following the instruction of each grammatical structure. There were a total of 10 quizzes, one for each of the ten targeted grammatical structures. Each item on the grammar quizzes, consisted of a stem and four multiple-choice responses focusing on one of the ten grammatical structures taught during the treatment phase. The grammar test contained 15 items and possible test scores ranged from 0 to 5 points, and each took approximately 15minutes to complete. Possible quiz scores ranged from 0 to 5 points.

3.3. Data analysis

To analyze the obtained data, a t- test computation was applied, in which the scores obtained for multiple-choice questions were the dependent measure. The alpha level for the analyses was set at 0.05.

4. Results and discussion

4.1 comparing inductive vs. deductive method on short-term

Std. Error Mean	Std. Deviation	Mean	Ν	group
.50913	3.22003	19.6250	40	deductive
.63940	4.04391	17.8250	40	inductive

t-test for Equality of Means								ne's for lity of nces	
	95% Confidence Interval of the Difference Std. Error Mean Sig. (2-						Sig.	F	
3.42720	.17280	.81734	1.8000	.031	78	2.202	.128	2.371	Equal variances assumed
3.42849	.17151	.81734	1.8000	.031	74.275	2.202			Equal variances not assumed

To compare inductive vs. deductive method in short time, the researcher conducted a t-test to understand which one is more effective in short time. The results of t-test showed a significant difference between scores that obtained from grammar tests that are taught by these two methods.P-value.031 is less than α =. 05. , also there is a significant difference between the means of scores, inductive(17.8250) and deductive(19.6250), which implies that deductive was more effective for EFL learners' on short-term learning of grammatical structures.

4.2 comparing inductive vs. deductive method on long-term

Std. Error Mean Std. Mean N group

	Deviation			
.25866	1.63593	6.1250	40	deductive
.31315	1.98051	5.9750	40	inductive

t-test for Equality of Means								e's for ity of ices		
95% Confidence Interval of the Difference				Sig.						
Upper	Lower	Std. Error Difference	Mean Difference	(2- tailed)	df	t	Sig.	F		
.95861	- .65861	.40616	.1500	.713	78	.369	.159	2.019	Equal variances assumed	

To compare inductive vs. deductive method on long-term, the researcher conducted a t-test to understand which one is more effective on long- term. The results of t-test did not show a significant difference between scores that obtained from grammar tests that are taught by these two methods.P-value.713 is more than α =. 05., also there is not a significant difference between the means of scores inductive(5.9750) and deductive(6.1250), which implies that both of these two approaches ,deductive and guide inductive, are similar on long-term learning of grammatical structures.

4.3 comparing deductive scores on long -term and short-term

Std. Error Mean	Std. Deviation	Mean	Ν	group
.50913	3.22003	19.6250	40	deductive
.64666	4.08984	15.3125	40	final

								ie's	
		Test	for						
t-test for Equality	t-test for Equality of Means							nces	
95% Confidence of the Difference	e Interval	Ctd Freez	Maan	Sig.					
Upper	Lower	Std. Error Difference	Mean Difference	(2- tailed)	df	t	Sig.	F	
Орреі	Lower	Difference	Difference	talledj	u		Olg.	1	Faul
5.95103	2.67397	.82303	4.3125	.000	78	5.240	.178	1.846	Equal variances assumed
	2.67254	.82303	4.3125	.000	73.929	5.240			Equal variances not assumed

To compare deductive scores on long –term and short-term, the researcher conducted a t-test to understand students learn better by this method on short-term or long-term. The results of t-test showed a significant difference between scores that obtained during the treatments and scores that obtained on final test. P-value.000 is less than α =. 05., also there is a significant difference between the means of scores, short-term(19.6250) and long term(15.3125), which implies that students learned better by this method on short-term.

4.4 comparing inductive scores on long -term and short-term

Group Statistics

Std. Error Mean	Std. Deviation	Mean	N	group
.63940	4.04391	17.8250	40	inductive
.78287	4.95129	14.9375	40	final

t-test for Equality of Means							Lever Test Equal Varia	for lity of	
95% Con Interval Difference	of the	Std. Error	Mean	Sig. (2-	-16		Ci-	F	
Upper	Lower	Difference	Difference	tailed)	df	t	Sig.	F	
4.89984.	.87516	1.01080	2.8875	.005	78	2.857	.178	1.850	Equal variances assumed

To compare inductive scores on long –term and short-term, the researcher conducted a t-test to understand students learn better by this method on short-term or long-term. The results of t-test showed a significant difference between scores that obtained during the treatments and scores that obtained on final test. P-value.005 is less than α =. 05., also there is a significant difference between the means of scores, short-term(17.8250) and long term(14.9375), which implies that students learned better by this method on short-term.

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