

The Effect of the Deductive Method on Students' Performance in Grammar in an SHS Classroom

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Abstract

The current study aims at investigating the effect of using deductive and inductive methods on students' grammar in a Senior High School (SHS) in Ghana. It examines the effect of the deductive method on students' performance in grammar and to find out the statistically significant difference between students taught using the deductive method and those taught using the inductive method. 100 students were chosen for the purpose of the study. There were two groups consisting of 50 students each. One of the groups is made up of the experimental while the other is the control group. The research instrument used is a pre-test and a post-test. The current study used quantitative approach to analyse data from control and experimental groups. Whereas the experimental group was taught using the deductive approach, the control group was taught through the inductive approach. Firstly, a pre-test was administered to both groups, after which the experimental group had a treatment stage lasting for four weeks. Data was collected and analysed through a t-test. The results of the analysis show significant differences between the means of the two groups of students' scores in the post-test. The result is in favour of the experimental group (the group taught using the deductive approach of teaching). Findings revealed that there were differences in the mean grade point average of both groups, and statistically significant difference was observed. The questions that guided this study were: what is the effect of the use of the deductive method on students' performance

in grammar? And is there any statistically significant difference between students taught using the deductive method and those taught using the inductive method? There was, therefore, support for the research's hypothesis. It was hypothesized that there is a good effect of the deductive method of teaching on students' performance in grammar which resulted in the high performance of students in the experimental group.

Keywords: deductive method, performance, grammar, SHS context

1. Introduction

Language is a crucial medium that allows people to convey their thoughts, ideas, perspectives, opinions, and feelings. It is one of the qualities that sets human civilization apart from that of animals. Since English is spoken all over the world, it is seen as a global language that facilitates communication between individuals, nations, and the international community. Moreso, the English language is a subject that is taught in our educational system and it is also employed as a medium of instruction in all other subjects except the local languages and French. English language proficiency is therefore unquestionably important for everyone, but notably for those working in the formal sectors such as companies, organisations, educational institutions among others. However, every language has its own structure or pattern that it adheres to in order for its speakers to comprehend and be understood. That is to say, words in a phrase or in a sentence are arranged in a certain, predetermined grammatical sequence for ease of communication. Communication problems may arise if this established language ordering or conventions are not followed. For an illustration, we may say, "Kofi is going to school" and not "School to Kofi going is,." This logical pattern is what is termed as word order in the English language. Grammar provides information on the rules of the language structure. Whilst grammar is the format which language speakers employ in communicating, language is the entire means through which individuals express their ideas and sentiments. So, Kaur & Niwas (2016) assert that, if language is conceived of as a means of expressing one's ideas and feelings, grammar is the mechanism that propels that vehicle. They maintain that language is driven by grammar and that it serves to convey our thoughts and emotions. Chomsky (2002, p. 11) adds by saying that the grammar of a language should be thought of as "a device of some sort for producing the sentences of the language under analysis." This means that grammar is a set of rules used to construct every phrase or sentence a language can produce. Since language usage would be restricted without a solid grasp of grammar, teaching grammar becomes very crucial to language teaching and learning of the English language. Students can improve their language skills by using grammar. Without a solid knowledge of grammar, it is impossible to communicate effectively or even learn a language in a systematic way. Therefore, there is no doubt that knowing and understanding grammar and its rules promotes good speaking and writing. In actual fact, one's ability to comprehend what one reads would be severely hampered by a lack of grammar knowledge since one would be unable to express oneself clearly. For example, the word "*import*" has a dual pronunciation depending on whether it is a noun or a verb. [ˈɪmpɔ:t] (goods brought in) if it is a noun and [ɪmˈpɔ:t] (the act of bringing in) if it is a verb. Indeed, the knowledge of grammar cannot be overemphasised in

teaching and learning of languages in general and in the teaching and learning of English in particular.

If language is a tool for communication, then the words that are used to communicate must be put together in a certain way to express meaning. It follows that there is a form or structure that language users follow in order to convey meaning. The underlying structure of language makes it possible for users to construct comprehensive and insightful statements. Every language has a specific and unique grammar that takes the shape of this structure. Greenbaum & Nelson (2002, p. 1) claim that grammar is the core of a language. It serves as a bridge between the system of sounds, the system of written symbols, and the system of meaning. Additionally, Thornbury (1999, p. 1), stipulates that "Grammar is primarily the study of possible forms of structures in a language. Thus, grammar is a description of the rules governing how sentences are constructed in a language. This presupposes that a sentence must adhere to some basic rules that govern it, in order to be considered accurate and meaningful. In writing and reading, grammar is highly significant for effective communication. It is also, essential for effective and professional writing because it helps to achieve a clear, logical flow of thought and inherent meaning. It would be quite difficult for a speaker or a writer to clearly express his or her ideas in a way that audiences or readers could understand without the use of grammar (Dalil, 2013, p. 11). According to Debata (2013), understanding grammar enables learners to repair their errors and enhance their written work. In fact, according to him, "one cannot correctly learn a foreign language or second language by unconscious absorption" (p. 479). Thus, grammar instruction is important for both teachers and students. If this is so, how then is grammar taught in various classrooms? One of the most controversial and unanswered questions regarding effective language teaching and learning is the issue of whether grammar should be taught deductively or inductively. Some linguists and pedagogues are for the zero position of grammar teaching by Ellis (1999). For the supporters of this perspective, grammar should not be taught because it insignificantly contributes to language acquisition and communicative competence (Ellis 1999; Bakhtin 2004; Golda 2019). Golda (2019, p. 3) notes that "To speak any language whether foreign or native, entirely by rule is quite impossible... language is learnt by practising and not by just memorizing the rules of grammar". For them, memorising grammar rule is one thing and applying them in a communicative situation is also another thing. On the contrary, some other linguists and pedagogues are of the view that grammar should be taught. López and Fonseca (2018, p. 21), stipulate that "we must put to light the importance of grammar, for effective communication takes place when learners know the structure of the target language". For Debata (2013, p. 479), "A person can't learn a foreign language accurately only through a process of unconscious assimilation. Grammar is a sure ground of reference when linguistic habits fail us. So grammar is indispensable for students". Grammar knowledge is at the center of language development and so:

The zero grammar approach was flirted with but never really took hold, as is evident in current textbook materials emanating from publishing houses" ...Nowadays most people agree that grammar might benefit the pupils, but how it is to be taught is still a controversial issue (Whitney and White, 2001, p. 23).

English grammar instruction in ESL classes, according to Zhang (2009, p. 185), is crucial

because it helps students become linguistically competent. It is worth noting that Ellis eventually gave up on the zero position of grammar teaching. According to him, “Grammar should be taught in a communicative manner for students who receive such grammar instruction do better...” (Ellis, 2006, p. 83). He adds that “the major objective of grammar instruction is to help students develop their language skills and to help them utilise grammar as a source for creating effective, acceptable, and efficient oral and written discourse depending on the circumstances (p. 86).

The right and best approach to use in teaching grammar remains highly debatable, despite the crucial role it plays in language teaching and learning as well as in the development of language skills. Generally, grammatical rules are taught in isolation (devoid of pragmatic contexts), and students are not taken through enough practice. It is also taught without the use of proper techniques and instructional strategies. Alzubi (2014) states that by altering our instructional strategies and employing various teaching methodologies, we may address the issue of teaching English grammar. The efficiency of the deductive and inductive methods of teaching English as a Second Language in our schools need to be ascertained so as to know which method or approach is appropriate for teaching and learning at a given point in time. Therefore, the present study attempts to fill this gap in literature and to shed light on the benefits of using the deductive approach to teach grammar. The findings of the study may be used by curriculum planners and curriculum developers to develop the deductive approach for effective teaching in the English language. The curriculum planners and teachers can rely on the findings of this study instead of relying on their own unaided intuition. Future researchers can also conduct further research in this field by extending it to other levels, other subjects, and other schools in the country. The current study used quantitative approach to analyse data from control and experimental groups. It aims to explore the effect of the deductive method on students’ performance in grammar and to find out the statistically significant difference between students taught using the deductive method and those taught using the inductive method. The following research questions are posited in order to achieve the research objectives

1. What is the effect of the use of the deductive method on students’ performance in grammar?
2. Is there any statistically significant difference between students taught using the deductive method and those taught using the inductive method?

Hypothesis

1. The null hypothesis is that there is no effect of the deductive method on students’ performance in grammar.
2. There is no statistically significant difference between students taught using the deductive method and those taught using the inductive method.

Delimitation of the study

The English language is divided into various aspects: oral, reading, grammar, writing and literature. This study however focused on grammar teaching and more specifically the teaching of grammatical concord. It should be noted that the phenomenon of linguistic agreement covers a number of concepts, namely: gender and number agreement, subject-verb agreement and concord within tenses among others. In this study, focus is placed on subject-verb concord using the deductive approach. This is explained by Norlander's (2012) assertion that the most frequent concord error found among students 'work is subject-verb disagreement.

Limitation of the study

This study was limited to a Senior High School in Ghana. As a result, although the conclusions of this study may be applicable to other schools not sampled, it would be impossible to generalise the results to all the Senior High School in Ghana, hence the need to replicate the study in other schools.

2. Literature Review

2.1 Methods of Teaching Grammar

Richards (1985, p. 32) refers to the term '*method*' as "a language-teaching philosophy that contains a standardised set of procedures or principles for teaching a language that is based upon a given set of theoretical premises about the nature of language and language learning", Rodgers (2001, p. 4) on his part defines methods as "teaching systems that are essentially fixed with techniques that are generally prescribed." With the above definitions, it is possible to argue that a method is a set of guidelines deployed or adhered to when teaching a language. The form or structure of language can be taught through varying techniques and methods. Notable among them are: the grammar-translation methods, the direct method, the deductive and the inductive methods

2.2 Grammar-translation Method

The term classical or grammar-translation refers to a tradition of language teaching that was embraced by western culture and evolved through many centuries for teaching both foreign languages and classical languages, such as Latin and Greek. The Grammar-Translation Method, as its name implies, places strong emphasis on the grammar of a second language. Its main approach is translation from and into the target language. The primary focus was on learning vocabulary, translating texts, doing written tasks, and understanding morphology and grammar principles. Even when different approaches were developed, the grammar translation method remained a prominent strategy in modern language teaching. Nafi (2016, p. 39) asserts that "in English as a foreign language, teaching grammar was done by using the mother tongue, and it was important to extract the meaning of the target language by translating grammar rules into the native language by following the Grammar – Translation approach." This means that

the Grammar-Translation Method involves translating into and out of the target language. This approach concentrates on teaching second language grammar. The students' first language continues to serve as the second language's reference system. Language learners use a passive approach to learning the language, and teachers are seen as authorities and so, the Grammar – Translation method is known as the teacher-centered approach. A strong critique of the Grammar Translation Method has been made. According to Finocchiaro and Brumfit (1983, 92), the grammar component of the Grammar-Translation method was highly criticised because the approach was deemed inappropriate and in part, it was thought that it places too much emphasis on grammar resulted in learning about the language rather than how to use it. Thus, learners were unable to use grammar items/ concepts learned in pragmatic communication situations. These objections of the Grammar-Translation in approach led to the establishment of the direct approach of teaching.

2.3 Direct Method

In response to his dissatisfaction with the Grammar-Translation Method, Berlitz (1852–1921) designed the Direct Method. The direct method, according to Dalil (2013, p. 23), was proposed by Charles Berlitz in the early 20th century. He claims that the fundamental assumption of this approach is that learning a second language is identical to learning the first language. As a result, instruction is given in the target language. The direct method involves teachers training students in the target language. In other words, teachers allude to the language and teach it without recourse to the learner's first language. The target language is used to teach with the help of teaching aids and metalinguistic tools to enable learners to grasp the language concepts. Direct teaching is a systematic teaching method that necessitates a strong subject-matter understanding on the part of the teacher. In this approach, the teacher's job is to oversee class activities, motivate students to engage in class activities by asking them probing questions often and correcting their errors as soon as possible. There have been several methods suggested for teaching English grammar. The three primary methods for teaching grammar are the deductive approach, the inductive approach, and the teaching of grammar through text (Thornbury, 1999, p. 29-30).

2.4 Deductive Method

Shaffer (1989, p. 395) defined the deductive approach as a technique whereby foreign language teachers introduce new grammatical structures by first providing the rules followed by some examples. The deductive or rule-driven method of teaching grammar begins with the presentation of the rule, followed by instances that illustrate the rule. In a deductive lesson, the teacher first explains the grammatical rules, then gives the students examples illustrating the grammar structures, and finally, the students utilize the rules to create their own examples. Some of the results of a deductive approach show the necessity for explicit grammar teaching to assist students to understand the grammatical rules (Thornbury, 1999; Shrum & Glisan, 2016).

Adamson (2009) examines some of the benefits and drawbacks of the deductive approach. He believes that one benefit is that the deductive approach to teaching grammar lays emphasis on getting straight to the issue. Because of this, many principles, especially those pertaining to

structure, may be conveyed more swiftly and simply than through the use of examples. The deductive approach also recognizes the importance of cognitive processes in language acquisition and respects the intellect and maturity level of learners, especially adult learners. Additionally, the approach supports many students' expectations for classroom instruction, particularly those who learn analytically. Thus, students analyse a set of rules critically and use them in relevant issues. Finally, it allows the teacher to deal with language points as they arise, rather than having to anticipate them and prepare for them.

The deductive approach also has several drawbacks as outlined by Adamson (2009). He contends that introducing the grammatical rules at the beginning of the lesson can turn off some students, especially the younger ones. They might not comprehend the concepts required or they might not have enough metalanguage to discuss language terminology. Grammar explanation promotes a teacher-centered environment thereby offering less opportunity for students' engagement and interaction in the classroom. Another disadvantage is that explanations are hardly remembered. This method promotes the idea that learning a language is only a matter of understanding the rules. According to some studies, the Grammar-Translation Approach teaches grammar deductively. In other words, the presentation of rules, ideas, concepts, or theories comes first, followed by a discussion on how they might be applied. That is, teaching is done from broad to particular concepts (Widodo, 2006). Grammar teaching in a language class can also be imparted through inductive teaching, in which rules are first deduced from examples and then presented.

2.5 Inductive Method

Moving from specific to general is known as inductive. An inductive method is a situation where learners are shown examples of language use, from which patterns and generalizations eventually emerge. In the inductive approach, students pay close attention to specific forms and attempt to independently come to metalinguistic generalizations (Erlam, 2003, p. 252). According to Thornbury (1999), learners are given samples that include the target grammar that they will learn while using an inductive technique. The students then attempt to deduce the rules on their own as they work with the examples. Students develop their language skills by coming up with their own examples after learning the grammatical principles. Nunan (1999) contends that the inductive method involves students learning the grammatical principles by studying the instances on their own. It is also possible to employ a context for grammatical rules in the inductive method. In other words, instead of learning grammatical principles through isolated phrases, students study the rules in a text or on audio.

3. Theoretical Framework

In every research work, there is a theoretical framework that underpins the study. Therefore, this work employed a theory on which the study is based. Le Compte and Preissle (1993) define a theoretical framework as a collection of interrelated concepts that can be used to direct research with the purpose of predicting and explaining the results of the research. That is, a theoretical framework is used to provide the rationale for conducting the research. According

to Richards and Renandya (2002), many traditional approaches to language teaching are based on a focus on grammatical form and a cycle of activities that involves the presentation of a new language item, practice of the item under controlled conditions, and a production phase in which the learners try out the form in a more communicative context. This has been referred to as the PPP approach. PPP is a three-part teaching paradigm: Presentation, Practice and Production which is based on behaviourist theory. It states that learning a language is just like learning any other skill. The PPP is a three-phase framework propounded by Byrne (1996) that support the deductive approach of grammar teaching. This framework is adopted in this study because the topic has to do with grammar teaching.

At the Presentation stage, the teacher begins the lesson by setting up a situation, either eliciting or modelling some language that the situation calls for. The presentation stage may consist of model sentences, and short dialogues illustrating target items, either read from a textbook, heard on a tape, or acted out by the teacher. At this stage, the teacher highly controls the teaching and learning process. The materials in this stage contain all the targeted linguistic items and structures and the teacher uses textbook models, the target structure, or lexical items and offers the necessary explanations. The rules are given to students first followed by the explanation and examples. At the practice stage, students practice the new language structure in a controlled way. They drill sentences or dialogues by repeating after the teacher or the tape, in chorus or individually until they master the language item correctly. Practice activities may include matching parts of sentences, completing sentences or dialogues and asking and answering questions using the target language. This stage reflects a high level of teacher control because the teacher checks the students' correct understanding of the items presented in the presentation stage. These activities are aimed at achieving accuracy of forms so that fluency can be later achieved in production activities. In addition, these activities are aimed at achieving mastering over the linguistic targets presented in the presentation. At the production stage, students are encouraged to use the new language item in a freer way, either for their own purposes and meanings or in a similar context introduced by the teacher. It can be a role play, a simulation activity, or a communication task. The framework reflects a notion of practice makes perfect, common in many skills; it allows the teacher to control the content and pace of the lesson. Skehan (2003), remarks that it provides a clear teacher role in accordance with power relations often found in classrooms. The production stage aims at increasing fluency in linguistic use, precisely through autonomous and more creative activities. The strategies for achieving these goals are based on a freer use of the targeted structures. The kind of activities in the production stage include discussions, debates, role-plays, problem-solving activities, opinion and information gaps etc.

3.1 Related Studies

In matters of second language acquisition, researchers have long wondered whether the deductive approach to language teaching influences language acquisition and fluency. Researchers have mixed opinions on which approach to use to teach grammar effectively. In Ghana for instance, Anani (2015) carried out a study on the impact of the inductive and deductive approach to teaching and learning grammar at the Junior High School (JHS) level in Ghana. It was found that the inductive method of grammar teaching had a more positive impact

on learners' language acquisition than the deductive approach. The survey was quasi-experimental with 2 classes of 26 learners each forming the experimental and the control group. A pre-test and post-test were administered to both groups. This implies that the inductive method is better suited for teaching grammar.

However, in another study, Biney (2019) looked at grammatical concord and its semantic effects in six JHS in the Cape Coast Metropolis. In all, 18 learners (three in each selected school) and 6 teachers (including one in each selected school) took part in the survey. The study was qualitative (descriptive and exploratory). After the analysis, Biney (2019,) strongly recommended the use of the deductive approach to grammar teaching. According to him,

teachers are also encouraged to use the deductive approach for the teaching of grammar rather than the inductive approach. With the deductive approach, teachers should get their students involved with new grammar topics by using leading questions and thereafter, introducing the topic of the day (p. 142).

Yet another study by Mohammad (2008) examined the impacts of teaching methods such as the deductive and inductive approaches on Jordanian University students' use of the active and passive voices in English. Al-Balqa' Applied University and Jarash Private University, two universities in Jordan, hosted the research. Three student sections—two from the first university's Amman Faculty of Engineering Technology and one from the second university's Faculty of Arts, English Department—participated in the study. The students of each class were split into two groups at random, with one group being taught the passive and active voice using the deductive method and the other using the inductive method. Pre-test and post-test were the study's instruments. The findings of this study showed that students in the deductive approach groups significantly improved their usage of the passive and active voice compared to those in the inductive group.

An experimental comparison of deductive and inductive feedback was conducted by Nagata (1997). This paper outlines and gives an empirical analysis of a parse-driven Japanese tutor created for second language training. The study's findings suggest that for learning moderately complicated structures, continual rule-driven deductive feedback is superior to example-driven inductive input.

The efficiency of inductive and deductive education in teaching grammatical structures to Dutch secondary school students in an ESL (English as a Second Language) classroom is examined by Berendse (2012). 54 secondary school students took part in this study; they were split into two groups: a deductively taught group (28 students) and an inductively taught group (26 pupils). Pre and posttests served as the study's research instruments. According to this study, both the inductive and the deductive groups did noticeably better on the post-test than the pre-test in both the past tense and the present perfect tense.

The relative effects of deductive and inductive teaching on the learning of direct pronouns in

French were examined by Erlam (2003). The study which was carried out in New Zealand involved three groups of 69 pupils in total. The control group, which had 26 students, was in group three. Group one had 21 students and was taught using the deductive technique. Group two had 22 students and was taught using the inductive method. Each lecture lasted 45 minutes over the course of one week. Oral production exams, written production tests, and listening comprehension tests served as the study's instruments. The findings of this study provided evidence in favor of the efficacy of deductive language instruction with school-aged learners in a teacher-centered classroom setting. What were the findings? In favour of the inductive or deductive approach?

Galotti (1997) looked into how differently children performed while learning grammar through the deductive and inductive methods. To determine when and how children differentiate between deductive and inductive issues, the study was done on primary pupils in the fourth grade. It was found that learners who were taught using the deductive approach solved problems with greater confidence than those taught through the inductive approach.

Yuruk (2000) evaluated the impact of inductive and deductive learning strategies on chemistry students' academic performance, chemistry-related attitudes, and academic self-concept. In this study, sixty-two freshmen from a general chemistry class took part. When students' science process abilities, attitudes toward chemistry, and academic self-concepts prior to the treatment and pre-achievement were statistically controlled, it was discovered that students exposed to inductive content sequence performed better on essay-type tests than students exposed to the deductive content sequence. However, following the therapy, when the aforementioned confounding variables were statistically controlled, there was no significant difference in their attitudes toward chemistry, academic self-concepts, short answer test achievement, or multiple-choice test accomplishment. Based on the finding of the various related studies, it could be noted that the debate on either to use the deductive or the inductive approach to grammar teaching remains inconclusive. However, in this study, the deductive method has proven to be much more effective. Let us note that the students in question are science students and are much more predisposed to learn by rules. This is supported by Blair (1982, p. 72), when he posits that « focus on form grammatical knowledge may serve as a memory devise, helping learners remember how to produce a particular form until they can produce it automatically”. Ellis (2000, p. 13), also estimate that “focus on form grammar instruction may help raise learners` consciousness of a form which they have not noticed when they have read or heard it, so that learners may learn to recognize the feature and probably use them in their own discourse”. With the deductive approach, learners are called upon to make deep mental reflections in order to understand the structure and the metalinguistic explanations rather than just following model speeches without understanding the grammar concept taught. The deductive approach thereby leads to critical thinking which is very crucial in education.

I think that there should be a paragraph summarizing the findings of the different studies with your stance which is in favour of the deductive approach.

4. Methodology

Raman (2009) states that a methodology is a systematic procedure of combining research approaches and data analysis to ensure that research performance can be well achieved. Each section of this methodology is important because it ensures that good data collection methods are carried out according to the research questions and objectives (Goundar, 2012). Creswell (2009) explained that the choice of methodology can affect the quality of a research. Research methodology explains the ways by which you may proceed with your research. It involves the learning of the various techniques that can be used in conducting research, tests, experiments, surveys and critical studies. Research methodology seeks to explain the rationale of a study: why a research has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated, what data have been collected, what particular method has been adopted, why a particular technique of data analysis has been used and a host of similar questions. (Goundar, 2012).

4.1 Research Approach and Design

Burns & Grove (1993, p.777) define quantitative research as a formal, objective, systematic process to describe and test relationships and examine cause and effect interactions among variables. Silverman (2010, p. 118), posits that “quantitative methodology helps to explore the ‘how many’ aspect of a research whereas qualitative methodology provides insights into the ‘how’ aspect of the research.” A quantitative approach was employed in this study. The aim of this study is to investigate the effect of the deductive method on students’ performance in grammar. The design adopted is experimental. To achieve this aim, two groups of students (experimental and control groups) were used.

4.2 Population

According to Burns and Grove (1993, p. 779), a population is defined as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. Our population consists of form one students of Presbyterians Boys’ Secondary School, Legon (PRESEC). PRESEC is a well-known science school with some other programmes. For each form, there are 22 classes for general science, two classes for agricultural science, six classes for business, six classes for general Arts and three classes for visual Arts. This school is chosen because of its outstanding performance and also, due to the fact that the research topic under discussion cuts across all academic levels. In addition, form one students are freshers and their background has to be tested in order to use the appropriate method. Hence the choice of form one students.

4.3 Sample and Sampling Technique

Mouton (1996, p. 132) defines “a sample as elements selected with the intention of finding out something about the total population from which they are taken”. A convenient sample consists of participants included in the study because they happen to be in the right place at the right time (Polit and Hungler 1993, p. 176). Furthermore, the sample size is closely related to the effectiveness of a study (Hua, 2016). The sample selected should represent the entire population (Jha, 2017). This means that the information obtained from the selected sample

should represent the information to be obtained from the population. The two form one agricultural science classes consisting of 50 students each were purposively selected; one as the experimental group and the other as the control group. This is because most classes in PRESEC have 50 students each. Agricultural students were selected because English language teachers complain so much about their performance in the language particularly in grammar. As a result, this study seeks to examine whether the problem is from the teaching methods adopted by English teachers or is from the lack of interest on the part of the students in learning and applying grammar rules in their productions. Agricultural students were therefore chosen as the participants in the study in order to investigate the method that would be efficient and appropriate to enhance their performance in grammar. Again, it is believed that the population sample was representative and the result of our investigation could, to some great extent, be extrapolated since the phenomenon under study happens in almost all second language classrooms. We, therefore, wanted to see the effect of the deductive method of teaching on students' performance. This research was highly motivated by the experience we had as English teachers.

4.4 Research Instruments and Data Collection

The tools used are pre-test and post-test. The two tests were designed by the researcher to measure students' knowledge in the use of grammatical concord in English Language. The tests consisted of 20 objective questions, each worth a mark. The total mark for each test was, therefore, 20 marks.

4.5 Data Analysis

According to Singh (2006), analysis of data means studying the tabulated material in order to determine inherent facts or meanings. This study used SPSS to run a t-test in order to analyze the data collected. We believe, just like Muijs that the SPSS software is user-friendly and capable of doing whatever we need in analyzing our data (Muijs, 2004). The techniques used for data collection as indicated earlier include a pre-test and a post-test. Respondents were grouped into; the experimental and the controlled group. Two tests were designed and administered for the study. The first step was a diagnostic test seeking to find out the grammar competency level of both the experimental and control groups. So, a pre-test was administered to both groups. After the pre-test, a treatment phase was gone through. That is, the experimental group was taught using the deductive method while the control group was taught using the inductive method for a period of two weeks.

4.6 Validity and Reliability of the Tests

To test the validity of the tests, the researcher gave copies to two experienced English language teachers to determine whether the questions measure the grammar, the number of questions, arrangement of questions, mark of each question, total mark of the test and suitability of the test time. All the comments made by the two experienced English teachers were used to make corrections and the necessary modification. To test the reliability of the tests, it was piloted with two groups consisting of 20 and 15 students respectively. The tests were administered to the students for 20 minutes. The researcher graded the answers and recorded the marks. The

students were tested and the marks recorded on the re-test. The reliability values obtained from Pearson's Pairson correlation were found to be suitable.

5. Results and Discussion of the Findings

This study was designed to determine the effect of the deductive methods on PRESEC form one agricultural students' performance in grammar. Agricultural science students were selected because these students are said to be performing poorly in English hence, they were chosen to represent the experimental group instead of pure science students or those taking biology, chemistry and physics. The Agricultural students were taught using the deductive method while the pure science students were taught using the inductive method. In this section, the results of the study are presented. The two questions of the study and the two hypotheses were all examined. The results are divided in accordance with the questions and the hypotheses of the study. The analysis of the SPSS was used to test these hypotheses.

5.1 Effect of the Deductive Method on Students' Performance in Grammar

A pre-test consisting of questions prepared by the researcher based on the English grammar syllabus verified by two English teachers, was administered to the participants of both groups in order to check their homogeneous ability in the subject. The table below shows the output of a t-test that was run using the students' scores obtained from the pre-test.

Table 1. Pre-test

Group	Number	Mean	P Value	Standard	Deviation
Experimental.	53	12.18	0.00	20.17	
Control	51	13.28	0.00	20.71	

Table 1 above shows two groups or categories of students; the experimental and the control group. There were 53 agricultural science students in the experimental group and 51 pure science students in the control group. From the result obtained, the mean value of the experimental group was 12.18, and the mean value of the control group was 13.28. This shows that there was no significant difference between the two groups and that they were almost at the same level of grammar competence. The two groups

Table 2. Post-test

Group	Number	Mean	P Value	Standard	Deviation
Experimental.	53	18.48	0.00	1.594	
Control	51	12.48	0.00	1.952	

A post-test consisting of similar grammar questions was administered to the two groups after intervention was given to the experimental group. The English teacher for the Agricultural science students or the experimental group used the deductive method to teach grammar while the researcher used the inductive method to teach the pure science students or the control group for one semester. The researcher chose to teach the control group to avoid bias. Further, since the same teachers complained about the performance of the Agricultural students, they were asked to adopt the deductive method instead of the inductive method. The findings from the post-test above, revealed the mean score of the experimental group to be 18.48 and that of the control group to be 12.48. It can therefore be concluded that the mean of the Experimental group increased significantly to 18.48 while that of the control group decreased slightly to 12.84.

To answer the first research question, effect of the deductive method on students' performance in grammar, the result of the pre-test and the post-test of the experimental group and the control group were compared. The comparison of the pre and post-test of the experimental group shows that the mean of the Experimental group increased significantly from 12.18 for the pre-test to 18.48 for the post-test. A difference of 6.3 increase in performance was observed. This shows that the deductive method was impactful on the Agricultural science students' performance in grammar. It is therefore clear that the inductive method of teaching grammar used by the English teachers was not effective. This, implies pedagogically that teachers should not make hasty conclusions or generalizations if one method out of numerous methods did not work with a particular group of students. Every group of students should be considered unique and teachers must be aware that a method that brings high performance of students in a subject with a particular group of students in a subject does not necessarily guarantee the same high performance with another group. A number of methods must be used until the appropriate one is found to bring out the best in students.

This result is similar to the result of Farwis et. al (2021) who did a study on "*The Effect of using Inductive and Deductive Approaches on Students' Achievement in Teaching English Grammar*" and found out that the experimental group performed more effectively than the control group.

To answer the first research questions of the study, the questions were changed into hypotheses. The null hypothesis is that there is no effect of the deductive method on students' performance in grammar while the alternative hypothesis states that there is an effect of the deductive method on students' performance in grammar. Again, to compare the effect of the deductive method on students' performance in grammar, a t-test formula was applied. The alpha value of 0.05 was used to run two-tailed tests. The result showed 0.00 of the alpha value which is less than 0.05 hence the null hypothesis which states that there is no effect of the deductive method on students' performance in grammar is rejected and the alternative hypothesis that states that there is an effect of the deductive method on students' performance in grammar is accepted.

5.2 Is there any statistically significant difference between students taught using the deductive method and those taught using the inductive methods?

To answer the second research question of the study: *Is there any statistically significant difference between students taught using the deductive method and those taught using the*

inductive methods? The null hypothesis is that there is no statistically significant difference between students taught using the deductive method and those taught using the inductive method while the alternative hypothesis is that, there is a statistically significant difference between students taught using the deductive method and those taught using the inductive methods. For testing the above hypothesis, SPSS was used to run a two tailed test at alpha level 0.05.

Table 3. Paired Samples Test for Experimental Groups

Group	Pre-test Mean	Post-test Mean	T Value	P Value	Critical Value
Experimental.	12.18	18.48	-22.246	0.00	-2.009
Control	13.28	12.84			

From table 3 above, the t-value is -22.246 which is less than the critical value of -2.009 between the Pre-test and Post-test for the Experimental and the control group. The test statistics of -22.246 falls into the rejection region hence we reject the null hypothesis that states there is no effect of the deductive method on students' performance in grammar. We, therefore, accept the alternative hypothesis which is that the deductive method is more effective to teach grammar than the inductive method. Thus, it is evident that there is a statistically significant difference between students taught using the deductive method and those taught using the inductive method. The results of this hypothesis are consistent with Wang (2012) who compared the effect of inductive and deductive approaches in teaching English verb tenses to Taiwanese English-majored freshmen of field-independent and cognitive dependent. The results showed that students in the deductive group improve more significantly than those in the inductive group. This result implied that explicit instruction of grammatical rules is the most efficient way to learn English for most Chinese learners.

6. Conclusion

The present study explored the effect of the deductive method on students' performance in grammar. Both groups had a similar level of grammar knowledge before the intervention. The findings of the study indicate that both the experimental and the control groups were at the same grammar competence level at the time of starting, but the experimental group performed better after the intervention. The statistical analysis shows that the deductive approach had advantage in terms of improving students' grammar knowledge. Therefore, one can say that the teaching of English grammar through the deductive method plays a positive role in improving the academic performance of the students. Teachers need to know what works for students in a particular class so as to adopt appropriate methods to bring out the best in them. It should not be taken for granted that because Science students perform better hence any method can be used for them. Teachers can conduct pre-tests for their students in order to

determine the appropriate method to use to help the latter perform better. Furthermore, it is necessary for teachers to vary their techniques and ways of teaching according to students' needs. This, will enable them to know whether to use the deductive or the inductive method which will improve teaching and learning in the long run.

Are there any implications for future studies? Are there any limitations or delimitations for the study which could affect generalizing the findings to the population?

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