

Practices of Deduction and Induction in the ELT Classroom: A Case Study

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Abstract

Deductive and inductive approaches are very well-articulated notions in the literature of teaching and learning grammar. This article first conceptualizes deduction and induction from a broader perspective, thereby connecting them to inductive and deductive approaches to teaching grammar. The case study this article draws from was based on the observation of two contextually similar classroom presentations– the first deductive and the next inductive– of an 'outstanding' student teacher as a separate model of each, aiming basically at sketching a comprehensive picture illustrating the classroom actualization of each of these approaches. Comparing the two models, it can be concluded that, regarding teaching and learning grammar, induction aligns more closely to the overall pedagogic essence than deduction does. As a future direction, the study can/should be extended to broader contexts in terms of participants and cases so as to obtain more comprehensive data, hence more reliable results.

Keywords: Deduction, induction, Practice Teaching, presentation, student teacher

Introduction

I treat this section as having two parts: conceptualization of deduction and induction from a broader perspective alongside their implication for language teaching, and the context of the case from which the study stemmed.

Deduction and induction

Deduction and induction are key concepts in the philosophy of science and research rather than simply as approaches to teaching, and have been discussed ever since Aristotle (Standler, 2003). Broadly, they are ways of generating knowledge in different fashions. As Standler (2003) views, deduction involves "transition from knowledge of a fact to knowledge of the reasons for the facts" (p. 1). On the contrary, in

Methew's (2003) conceptualization induction refers to "any inference in which the conclusion does not necessarily follow from the premises, but is only (sufficiently) likely in view of them" (p. 93). Thus, both deduction and induction are processes of generating knowledge through logical inference. They can be broadly viewed as processes relating to human cognition, rather than as a method or technique. The first moves from the principle/conclusion to the observation of the sample but the latter moves from the sample to the principle/conclusion. In their broader sense, therefore, it will be too much of a simplification to say that deduction and induction are typical of teaching and learning grammar alone. In fact, they are employed in language teaching, like elsewhere too, to facilitate learning grammar.

In the literature of language teaching, deductive and inductive are most commonly used to qualify 'approaches' to teaching grammar, though these notions are also often found bearing such labels as 'ways', 'methods', 'strategies' 'procedures', 'techniques' and so on. Throughout this article, I will be consistently using 'approach' because they are both assumptions describing the way language knowledge or ability is acquired. They are used to make statements about the conditions that promote successful language learning- all that an approach (not a method, a procedure or a technique) does (Harmer, 2008).

The concept of the 'focus-on-forms' instruction to a large extent aligns with the deductive approach. What we mean by 'focus-on-forms' instruction is "...the instruction that seeks to isolate linguistic forms in order to teach them one at a time... [as in] a structural syllabus" (Ellis, 2008) whereas the inductive approach falls mostly in congruity with the 'focus-on-form' instruction which is the classroom instruction in which, according to him, "attention to form arises out of meaning-centered activity derived from the performance of a communicative task" (p. 255). As Alzu'bi (2015) conceptualizes, the deductive approach to teaching grammar, is a 'rule-driven', 'top-down' approach. On the contrary, the inductive approach is a 'rule-discovery', 'bottom-up' approach. As noted by Haight, Herron and Cole (2007) in the deductive approach "...students are taught to focus on the rule before using the structural forms" whereas in the inductive approach, "...they are taught to use the grammatical structure in a functional practice session before the rule presentation" (p. 289).

Allen and Vallet (1972) point out a few procedural distinctions between the deductive and the inductive approaches. First, in the deductive approach the presentation (usually oral) starts with the statement of the rule or pattern. Then some sample sentences are presented for the students to repeat. Thirdly, ample opportunity is

provided to the students to practice the new pattern. Nonetheless, in the inductive approach, the presentation starts with examples followed by oral or written practice on the part of the students. Finally, generalization is made out of the examples; hence the rule is formulated out of the previous activity worked out either by the teacher or the students. Hence, the most explicit distinction between the deductive and the inductive lies on the order of the placement of the metalanguage (rule) and illustration (examples) during lesson presentation: the deductive is the rule-first and then the examples approach whilst the inductive is the examples-first and then rule approach.

To sum up, the deductive approach can be considered as one assuming language learning as an intellectual practice to be conducted by learners whereas the inductive approach is based on the belief that language acquisition gets fostered through discovery rather than learning the formal rules to be applied later on.

The context of the case

As a requirement of Practice Teaching, I was assigned by Mahendra Ratna Campus, Tahachal the role of an internal supervisor fairly recently. That meant I was supposed to observe the real classroom teaching of a few student teachers of Bachelor of Education (B. Ed.) in English. In the course of my observation, I identified a student teacher (pseudo-named *Mr. A* in this article) teaching English in Class 8 as typically being outstanding although the presentation was fully informed by the deductive approach. That is to say, at least, I was highly impressed by his presentation particularly in terms of the English language he operated with, the knowledge of the subject matter, classroom motivation and management, preparation and use of teaching aids, order of presenting the materials, the teaching strategies, and the like. Later, upon sharing about him with the other faculty from the Campus, I came to know that *Mr. A* was a well-noted student in the classroom. The sharing further consolidated my identification of *Mr. A* as being an outstanding student teacher. I planned to make a study on his classroom presentations. I personally contacted him and, having appreciated his presentation once again, asked if he could present (teach) the same grammar item once more as a demonstration class in the next section inductively. He wholeheartedly accepted my proposal, and thus, the demonstration class was agreed on to take place three days later. I observed his class presentation (see results in the 'Results' section).

So, the case study was set out to answer the following research questions.

- i. How would *Mr. A*, the student teacher, present the grammar item that he had presented deductively earlier, if he were to present it inductively?

- ii. How would his deductive and inductive presentations under similar conditions contrast?

Methodology

The methodological design of the study on which this article builds is outlined below.

Research approach

The study this article is rooted in was fundamentally guided by the qualitative approach to inquiry, more specifically an observational case study. Therefore, the key notion 'case study' as it is conceptualized in this study is elaborated in the following lines.

Case study

In this study the case study was conceived as a design which is "unique (in the sense of singular) and bounded" (Casanave, 2015, p. 129), and "...investigates one person...in depth...with a goal of understanding a phenomenon or a process as exemplified by the person" (Swanborn, 2010, p. 218).

Participant selection

As mentioned above, *Mr. A*, the participant of this study, was selected because his presentation (teaching) was particularly outstanding. In other words, his presentation was selected as a typical case.

Observation

I observed *Mr. A's* class presentation two times: the first presentation (deductive) and the second presentation (inductive).

Tools and equipment

In the first presentation, I used my diary to note down the major activities he (and the students) conducted during his presentation. Besides, I used a recording device to record what happened throughout the class.

Memo keeping

I noted down the significant contextual elements as memos to be used during the interpretation of the data later.

Data collection procedures

At both phases, I kept record of the major activities in the sequence they appeared, thereby ignoring what was unwanted or undesirable.

Ethical considerations

I conducted the observation of the first presentation as part of the responsibility assigned to me by the Campus. I got the second presentation organized in *Mr. A's* consultation, which means that it was organized on the participant's willingness basis.

Data analysis

First, I transcribed the recorded data. Then I integrated them with the notes and memos. I identified the pedagogically significant activities that took place in the class during both presentations. This enabled me to compare the first presentation with the second presentation.

Results

The actual classroom activities that *Mr. A* and his students performed are sketched in this section. The activities are presented as the classroom pictures. The two separate presentations are labelled 'Classroom picture 1' and 'Classroom picture 2' respectively.

Classroom picture 1: First presentation

Teacher (T): (Orally) Sit down. Well, you all, open your book on page 112. Here, you are going to learn about the simple present tense (writes 'the simple present' on the board). The simple present tense is used to say what people generally do. The structure of the simple present tense is like this (writes on the board): Sub. + V1/V5 + Obj.

You know if the subject is singular the verb takes the V5 (-s/-es) form, and if the subject is plural the verb takes the V1 (root) form. The next rule is- if the verb is the V1 form, we use 'do' while changing the sentence into a question or negative, but if it is the V5 form we use 'does'. Clear?

Students (Ss): Yes, Sir! (A few of them only nod their heads as a response. Some of them remain silent.)

T: Now, let's use the rules and do Exercise 5. O. K.?

Ss: O. K. Sir.

T: 'Policeman' (displays a picture of a policeman). So, this is the singular form of the word. How many of them are there? It's singular because there is only one. 'Shopkeepers' is plural because there are more than one (displays a picture). How many of them are there?

Ss: Three.

T: Three, right. So 'policeman' takes an –s/-es verb in the affirmative, and 'does not' in the negative because it is singular. 'Shopkeepers' takes the V1 form in the affirmative, and 'do not' in the negative because it is plural, isn't it?

So, make a sentence using 'policeman' as the subject and: *catch a thief* (affirmative) and *teach students* (negative).

(A short pause). So, Jagat!

S: Yes, Sir. 1) Policeman catches a thief. 2) Policeman does not teach students.

T: 'A policeman'; not 'policeman'. Hima!

S: A policeman catches a thief (affirmative). A policeman does not teach students (negative).

T: Good. Now, 'Shopkeepers'. It's plural, isn't it? Use: *sell goods* (affirmative) and *dig a farm* (negative). Who can say?

S (Hima): (Reads her answer). Shopkeepers sell goods (affirmative). Shopkeepers do not dig a farm (negative).

T: (In the plenary): Is Hima correct?

Ss (a few): Yes, Sir!

T: She is correct.

He assigns, as homework, the rest of the list of words in the book (i. e. *little kids, umpire, teacher, tourists, rich people, dramatists*) with a necessary clue for each. Most of the students, not all, write down the clues in their exercise books.

(The bell rings.)

[As the class was over– so, we were outside– *Mr. A* enthusiastically asked me for my 'responses' to his class activities. I replied that, as an inductive presentation, it was very nice. Yet, I suggested, it would have been even better if it had been presented inductively. Having assured that he knew what was meant by 'inductive', and considering his interest I asked whether he would do it after a few days in the next section. He was wholeheartedly ready for that endeavor. We decided the day to be the forthcoming Wednesday (three days later).]

Classroom picture 2: Second presentation

In this section the major activities conducted by *Mr. A* and his students in the second observation have been sketched. Typically, the steps of teaching were clearly notable at this phase.

Step I

T: Good morning Class 8.

Ss: Good morning Sir.

T: Well, we are going to play a 'who does what?' game today (writes 'who does what?' on the board). But before that, I am going to tell you what people do in my village. Are you ready to listen?

Ss: Yes, Sir.

T: (Orally; see the text in Appendix)

Step II

T: Well. Students, now look at this chart (draws the chart on the board). Now tell me 'who does what' in your family.

Who?	What? (✓)	What not? (×)
Grandparents		
Father		
Mother		
The children		

T gets four students to fill in the table individually. Then he gets some other (7) students to make sentences with the clues. He helps in case they need any until finally they make such sentences as follows orally:

Father earns money. He does not cook meals. Mother cooks meals. She does not climb up a tree. I go to school. I do not earn money. The children play. They do not go to market.

Step III

(T divides the class into six groups, A-F)

T: This time I will show and you'll have to say. O. K.?

Ss: O. K. Sir.

T: (Holds a flashcard high displaying 'Policeman', and provides some time). Group C! S (from Group C): A policeman catches a thief. He does not work on a farm.

T: Good. (Holds a flashcard high displaying 'Shopkeepers', and provides some time). Group F!

S (from Group F): Shopkeepers sell goods. They do not teach.

T: Good.

(T uses the same 'pattern of teaching' with the rest of the groups of the students and the rest of the words- *little kids, umpire, teacher, tourists, rich people, dramatists*. Then finally he reassembles the students into individuals.)

Step IV

T collects Ss' generalizations to make the rules, and sums up on the board in the following way:

A policeman/he/she works/plays, or does not work/does not play.

I/they/children work/play, or do not work/do not play.

(The bell rings.)

As the class was over – and we were outside – I managed an informal talk as a post-observation discussion with *Mr.*

A. This went like the following:

Observer: Which presentation, the previous one or today's, did you find more rewarding?

Mr. A: Well, it turns out to me that today's was much better. But it takes a little time, effort and patience...

Observer: Sure. You can take it at least for your purpose.

Discussion and Interpretation

First and foremost, the first presentation (Classroom picture 1) illustrates the deductive approach because it started with a few rules underlying the simple present tense. Only later on the examples were presented. In other words, it followed the conclusion-to-sample pattern. The second presentation (Classroom picture 2) was inductive because it followed the sample-to-conclusion pattern.

The first presentation and the second presentation contrasted in a number of ways as presented below.

First presentation

- The lesson started with the teacher's (T's) remark "Sit down. Open the book, page 112."
- T gave the rules in the beginning, and as a matter of practice, Ss were forced

Second presentation

- The lesson started with the mutual greeting "Good morning. Sit down" initiated by the teacher (T).
- T gave a presentation based on the real life situation. Then finally Ss

to apply them.

- The teaching-learning process was dominated by the 'teacher talking time'.
- T used a couple of materials (pictures to see) except the materials of daily use (i. e. the marker board and the book).
- Only a few of Ss (selected?) actively took part in the learning process.
- Most of the activities were conducted in the plenary.
- The rules T gave were not relevant to the errors Ss made while practicing to make sentences using the word given by T.
- T overtly corrected errors (i.e., negative feedback) as soon as Ss had made any (e. g. 'a policeman', not 'policeman').
- Most of the students were silent until they were compelled to respond.

were encouraged to generalize the rules themselves.

- The teaching-learning process was dominated by the 'student talking time'.
- T used flashcards and a chart as 'elicitors' for practice.
- Most of Ss were actively engaged in the learning process.
- Some of the activities were conducted in the plenary and some in groups.
- T did not give any overt rules initially.
- T helped Ss in case Ss experienced difficulty/confusion or made errors.
- Most of the Ss spontaneously took part in the learning process (problem solving etc.)

It is evident from the contrast that, for more than one reasons, the first presentation represents deduction and the second presentation induction. We have every reason to argue that the first presentation implies 'the transition from knowledge of a fact to knowledge of the reason for the fact' (Stanler, 2003), 'focus-on-forms' (Ellis, 2008), 'focus on the rule before using the structural forms' (Haight, Herron & Cole, 2007), and 'rule-driven and 'top-bottom' approaches (Alzu'bi, 2015). On the contrary, the second presentation reflects 'the conclusion ... not before the premises' (Methew, 2003), 'focus-on-form' instruction (Ellis, 2008), 'functional practice before the rule presentation' (Haight, Herron & Cole), and 'rule-discovery' and 'bottom-up' approaches.

The observation shows that a great majority of the students took part in the learning process more comfortably in the second presentation (see the contrast above).

It must be because it contrasted with the spirit of the 'jug and mug' theory i.e., 'the learner as an empty mug and the teacher as a full jug tipping the liquid into the mug' (Rosen, 2010). Rather, unlike the first presentation, it was a practical and more natural, and more learner-friendly mode of presenting. At least, with induction, the students did not have to load their heads with conclusions imposed on them without any sample to observe.

The deductive approach is traditionally very deep-rooted in the language teaching tradition in Nepal (Poudel, 2017). Of course, that's why *Mr. A*, the participant in this study, presented the lesson underlying this approach and only modified it on the supervisor's advice in the second presentation although he knew well about induction and its benefits over deduction. One reason why language teachers use deduction is that, as stated in this study by *Mr. A*, they find it more comfortable in terms of time, effort and patience. Of course, this is more of a matter of teachers' and students' mindset than a reality.

The study on which this article was based was conducted amid some serious limitations. It was a case study involving a single individual as a participant who has been described as 'outstanding'. Not all individuals are as outstanding as *Mr. A* in this study. The duration of data collection was very transient – two classes, one reflecting deduction and the other induction. For these reasons, it will be wrong to generalize the results to a wider situation. To overcome the limitations, future researchers should carry out larger-sized studies in terms of participants and data.

Conclusion

In this study the deductive and the inductive approaches to teaching grammar have been contrasted in terms of a number of real teaching activities. Although this study is limited to a single but exceptionally outstanding student teacher selected for a case study, it provides models of deduction and induction in teaching and learning language. As this study reveals, induction is pedagogically more effective (for lower-intermediate learners) than deduction because the former ensures greater student participation. The study also informs, however, that the main reason why the deductive approach is traditionally preferred to the inductive one by language teachers is that the former is less time consuming, and needing greater effort and patience. For more comprehensive, reliable and widely applicable results, similar but larger-sized studies in the future are recommended.

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Appendix

(The oral text)

Well then. The name of my village is Jamuna Pokhari. In my village, many people live together and do different jobs. The farmers work on their farms. They grow crops and vegetables. The children go to school and read. They do not stay back home on school days, I mean... school opening days. There is a health worker in the village. She comes to the village and tells what to do and what not, to remain healthy. She sometimes gives simple treatment to the people, but if the illness is more serious, she advises them to go to hospital and see the doctor. There are some teachers who teach at the local school. Nearly 400 students read at that school.