

Effectiveness of a Guided Inductive Approach with Socratic Questions: A Case Study

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Introduction

Given the lack of consensus as to whether the inductive or deductive approach results in more significant gains when it comes to learning grammar, this study seeks to contribute further evidence toward the effectiveness of the former. The inductive approach has been shown to result in more significant gains in certain circumstances, particularly when teaching complex grammatical structures, making its study a valuable endeavor for language education. How to implement this approach in language classrooms is an important topic, especially in East Asia where deductive learning seems to be the norm. This is understandable given the emphasis many of these countries place on formal testing, as the deductive approach successfully prepares students for such exams. However, if the inductive approach has measurable advantages over deductive learning, particularly in terms of learners' abilities to extend their knowledge beyond the boundaries of standardized tests, then more emphasis should be put on studying its effectiveness in environments where students are accustomed to explicit explanations from the instructor. As English becomes increasingly essential for participating in a globalized economy, real-world skills and an ability to function as an autonomous language learner and user will trump test scores. The literature review contains more detailed explanations of each approach and the findings that have resulted in our current understanding of the contention between them.

Literature Review

Although the debate over whether to focus on form in the second language classroom has more or less been resolved in favor of some kind of grammar instruction

(Norris & Ortega, 2000), the best way of administering such instruction remains controversial. Two approaches have dominated the thinking of researchers and teachers alike in this regard: the deductive approach and the inductive approach. Ellis (2006) states that in a deductive learning environment, the grammar is first presented and then practiced in some way. The inductive approach, on the other hand, requires learners to develop their own *metalinguistic generalization* based on the exemplars provided by the instructor (Ellis, 2006, p. 97). Vogel, Herron, Cole, and York's (2011) conceptualizations of these approaches, which were formulated with the context of the communicative French as a foreign language classroom in mind, are comparable. According to Vogel et al., the deductive approach suggests grammar rules be explicitly taught before practicing them, while the inductive approach focuses on grammar during or after a contextualized practice activity. Koshi (1996), acknowledging the plethora of dichotomous theoretical concepts related to this topic, makes a similar distinction between naturalists and formalists in her study on Socratic questioning in the second language classroom. Koshi maintains that naturalists, such as Krashen (1981), believe that learning and acquisition (i.e., explicit and implicit knowledge) are disparate processes that do not contribute to one another and are therefore opposed to formal grammar instruction. Formalists like McLaughlin (1978), on the other hand, contend that explicit learning is necessary, whether it precedes acquisition or is carried out simultaneously (Koshi, 1996). In short, the inductive and naturalist approaches involve letting students come to their own conclusions, whereas proponents of the deductive and formalist approaches value traditional grammar instruction. The fact that these definitions of the various concepts are complementary rather than contradictory suggests that there is agreement over what each approach entails, even though the usefulness of each remains disputable.

The debate over which approach is more effective in grammar instruction is not the result of a lack of research on the topic. Some research has been done on the efficacy of these approaches, but as Haight, Herron, and Cole (2007) have pointed out, this contention remains “[o]ne of the most frequently debated and unanswered questions on the subject of effective language learning” (p. 289). While Erlam (2003) and Robinson

(1996) found the deductive approach to be more effective, Herron and Tomasello (1992) and Haight et al.'s (2007) studies showed significant results in favor of the guided inductive approach. Still others (Rosa & O'Neil, 1999; Shaffer, 1989) came to the conclusion that there is no difference in efficacy between the two approaches after their studies failed to yield significant results. One reason for the varied conclusions reached by the aforementioned studies could be the fact that there is no consensus on the way in which to approach inductive learning, resulting in numerous interpretations and implementations of the same approach (Vogel et al., 2011). This contention has led Ellis (2006) to suggest a differentiated approach based on the needs of the students and the complexity of the target language. Ellis contends that simple rules benefit from deductive instruction, while the teaching of more complex structures is best done inductively.

Taking the contradictory results of previous studies into consideration, Vogel et al. (2011) more recently demonstrated that, within the confines of a communicative French as a second language classroom, guided inductive learning produced statistically significant short-term gains in grammar usage on an immediate post-test compared to a deductive approach. This was true even of students who stated on the accompanying survey that they preferred to be taught explicit rules before practicing the forms (Vogel et al., 2011). However, on the delayed post-test, there was no significant difference between the performance of students who had learned via the guided inductive approach and those who had undergone the deductive treatment (Vogel et al., 2011).

Koshi (1996) offers insight into how Socratic questioning can be used as a means of consciousness-raising in grammar instruction. This method coincides with the inductive approach in that it allows students to draw their own conclusions with the help of the teacher's carefully formulated questions. Koshi (1996) gives a multitude of reasons in support of Socratic questioning, concluding that it gives learners the opportunity to improve their analytic thinking ability while helping them to retain the grammar they have learned so it can be used outside of specific classroom situations. This seems to be true especially of advanced-level learners because beginner or intermediate-level students may not have the linguistic competence to accurately respond to the challenging questions posed by users of this approach.

Drawing on the ideas presented in Vogel et al. (2011) and Koshi (1996), this study seeks to test the robustness of an inductive approach with Socratic questions in the learning of indirect questions in a private lesson setting. Indirect questions are referred to as such because the speaker is either reporting a real or hypothetical question (Larsen-Freeman & Celce-Murcia, 2015) or framing a regular question in a polite, circuitous way. Although research on the topic of indirect questions is scarce, these forms will serve as a fitting focal point in this study for the following reasons. First of all, the participant regularly fails to produce indirect questions when using English, suggesting that she was never taught the correct form or has since forgotten it. In addition, the rules governing the construction of indirect questions are fairly straightforward and consistent, though producing them accurately proves problematic for many learners (Larsen-Freeman & Celce-Murcia, 2015). Wright's (2013) study tested the effects of working memory on accuracy and fluency in producing simple English questions. Wright demonstrated how difficult it can be for Mandarin-speaking students in an immersion program to produce simple questions, let alone more difficult, indirect ones using verbal inflection and auxiliary movement, *do*-support, and/or embedding. According to Wright, this may be influenced by the tendency for many East Asian countries to employ rote learning in their language curricula. The act of embedding, a requirement in the formulation of most indirect questions, is difficult because there is a tendency for learners to overgeneralize direct question inversion, which in this situation leads to ungrammaticality (Larsen-Freeman & Celce-Murcia, 2015). It was demonstrated in DeKeyser and Sokalski's (1996) study that forms that are easy to comprehend yet difficult to produce benefitted more from the practice of production skills than input skills in a Spanish as a foreign language setting. Because the production of indirect questions in English seems to fall into the same category, this study will focus on the target language in an output-rich, inductive learning context. Finally, based on Ellis' (2006) assertion, indirect questions should benefit more from an inductive treatment due to the fact that they are best classified as complex structures.

By attempting to use the ideas presented in Vogel et al.'s (2011) experiment with French learners in a much different learning environment, this study may be able to

contribute to the discussion of the generalizability of their results. The Socratic questioning techniques mentioned in Koshi (1996) will allow the researcher to focus on the effects of the inductive approach by ensuring that the participant reaches her own conclusions about the grammar. Although common forms of error correction, like recasts, prompts, and explicit correction, have been shown to be effective in the language classroom (Lyster & Saito, 2010), for the purposes of the present study, prompts will serve as the only means of correctional feedback. Not only have they been shown to be more effective in within-group contrasts than recasts (Lyster & Saito, 2010), but they also reinforce the assumptions of the inductive approach by avoiding the explicit supplementation of the correct forms. By solely relying on Socratic questions and prompts to guide the learner's progress, I hope to underline the effects of a purely inductive approach to the learning of indirect questions in a private lesson setting.

This study was framed around the following research questions:

- 1) Based on the comparison of written pre- and post-tests, what effect does the guided inductive approach have on learning the formation of indirect questions in a one-on-one EFL setting?
- 2) How can using the method of Socratic questioning in tandem with the inductive approach influence students' understanding of and ability to use indirect questions?

Methods

Participant

Emily (pseudonym) is a twenty-seven-year-old Taiwanese woman living in Japan. Her native language is Mandarin Chinese, though she is also fluent in Japanese. She has never been to an English-speaking country, but she learned English from the ages of twelve to fifteen at a cram school, thirteen to fifteen in the Taiwanese public school system, and for three years during university. At the end of her formal education, she earned a TOEIC score of 760. Although this score suggests that she is a high-intermediate or low-advanced level English user, she has not had the opportunity to learn En-

glish in an academic setting since graduating from university and thus lacks confidence in her abilities, especially regarding her grammatical knowledge and accuracy. That being said, she does have the opportunity to use conversational English on a day-to-day basis.

Pedagogical Materials and Procedures

Similar to the way in which Vogel et al.'s (2011) study was conducted, a Power-Point presentation was used to expose the learner to examples of the target language. Although the researcher used Vogel et al.'s (2011) pedagogical materials as a model, all of the materials used in this study were original due to the fact that Vogel et al.'s study was conducted in French with a dissimilar grammar point. These slides included basic questions in order to demonstrate the transformation that takes place when converting direct questions to their indirect versions. These included examples of questions in tenses that coincided with the way indirect questions are used in conversation. Five different tense-aspect combinations were used for the purposes of this study: simple present (using both *do* verbs and *be*), simple past (using both *do* verbs and *be*), present progressive, past progressive, and present perfect. The questions appeared in both their unmarked and third person singular marked forms and were grouped together by tense to aid in understanding. After being shown the direct question and listening to the researcher say it, the participant was shown a phrase associated with indirect questions. Then, the indirect question, constructed from the aforementioned information, was shown and read by the researcher. The participant was asked to repeat it.

The first two treatment sessions focused on instilling the participant with the rules needed for producing indirect questions, so this is where the consciousness-raising questions mentioned in Koshi (1996) were implemented. After the initial exposure to fourteen questions adhering to the criteria listed above, Emily was asked questions pertaining to the rules of making indirect questions. The researcher avoided explicitly providing the answer, instead simply rephrasing the original Socratic questions to lead the participant to her own conclusions. If necessary, the researcher went back to previous slides in order to assist her in answering the questions.

After eliciting the rules from the participant, fourteen different slides required her to convert direct questions into their indirect versions in order to maximize production practice. In contrast to the slides used for exposure, these questions were mixed in terms of both tense and subject. If the participant made a mistake, the researcher would use a prompt to elicit the correction. For example, if Emily neglected to add *if* or *whether* to the indirect version of a yes/no question, the researcher asked, “What do you need to add to direct yes/no questions to make them indirect?” Throughout the course of the treatment sessions, the researcher never directly provided an answer. In order to break up the potential monotony of the task, the researcher periodically directed some of the questions back at the participant to demonstrate the communicative value of the grammar.

The first two treatment sessions focused on yes/no and *wh*- questions respectively. The third was used to review both forms, so it naturally did not include the exposure or consciousness-raising activities characteristic of the previous sessions. In an attempt to connect the practice of the treatment sessions with the tasks required on the assessment, each treatment session concluded with a writing activity. The reason for this was explained to the participant in order to give more value to the task. The writing activity followed the same format of the pre- and post-tests, which are described in detail below. The participant reviewed the answers with the researcher after finishing.

The treatment sessions were approximately thirty-five minutes in length and took place exactly one week apart.

Assessment Instruments and Analyses

For this study, a written form of each exam was developed and administered. Each version consisted of ten questions (four yes/no items and six *wh*- question items), the order of which was randomized by tense and type.

In order to avoid overcomplicating the scoring system while maintaining an accurate representation of the complexities of constructing indirect questions, the following scale was developed (see Table 1). One point was added to a question’s value for every listed criterion the question contained. Naturally, some items were worth more points

than others. Spelling errors were not deducted from the score unless they contributed to the ungrammaticality of the sentence in regard to the target grammar. The results of the analyses for both the pre- and post-test can be found below, in the results section.

Table 1 : *Assessment Scoring Criteria*

Criteria	Value
Inclusion of <i>if</i> or <i>whether</i>	1 point
Direct question inversion reversal	1 point
Omission of <i>do</i>	1 point
Agreement adjustment (in cases where <i>does</i> or <i>did</i> was omitted)	1 point

Results

As stated in the literature review, this study sought to investigate (1) what effect the guided inductive approach has on learning indirect questions in a private lesson setting and (2) how the use of Socratic questions together with the inductive approach influences students' understanding of and ability to use new grammatical structures. The results of this study offer support for such an approach to grammar teaching. According to the above criteria, the pre-test was worth 17 points. Emily scored 8 out of 17. The majority of the errors on the pre-test involved direct question inversion reversal (80%), agreement adjustment (100%), and inclusion of *if* or *whether* (60%). In other words, the participant failed to produce many of the grammatical functions related to the construction of indirect questions. The only category in which the participant never made an error was the omission of *do*. It should be noted that in two out of three of the errors related to the inclusion of *if* or *whether* on the pre-test, the participant added *or not* to the end of the sentences. This suggests she might have had some knowledge of the correct form, but the resulting transformation was still ungrammatical. See Table 2 for more detailed results.

Table 2 : *Pre-Test Errors*

Error type	Number of errors	Total questions containing criterion	Percentage of criterion missed	Percentage of total errors
Inclusion of <i>if</i> or <i>whether</i>	3	5	60	33
Direct question inversion reversal	4	5	80	44
Omission of <i>do</i>	0	3	0	0
Agreement adjustment (in cases where <i>does</i> or <i>did</i> was omitted)	2	2	100	22

As for the post-test, Emily scored 15 out of 16 points, which was a 50% increase over her score on the pre-test. The only error she made was in regards to agreement adjustment (50%), but even this category saw an improvement. See Table 3 for more detailed results.

Table 3 : *Post-Test Errors*

Error type	Number of errors	Total questions containing criterion	Percentage of criterion missed	Percentage of total errors
Inclusion of <i>if</i> or <i>whether</i>	0	4	0	0
Direct question inversion reversal	0	6	0	0
Omission of <i>do</i>	0	3	0	0
Agreement adjustment (in cases where <i>does</i> or <i>did</i> was omitted)	1	2	50	100

Discussion

Emily made remarkable gains between the pre-test and post-test, thereby contributing to the evidence of other studies in favor of inductive learning, many of which have focused on the inductive approach in French as a second language classes (Erlam, 2003; Haight et al., 2007; Herron & Tomasello, 1992; Vogel et al., 2011). The participant in this study, with some prompting and assistance, was able to answer the Socratic questions posed after the exposure portion of the first two treatment sessions. In doing so, she formulated her own rules for the target language (e.g., *if/whether* needs to be added when making an indirect yes/no question) and was able to apply them to her performance in the spoken and written production exercises throughout the treatment. This knowledge seemed to transfer to Emily's performance on the post-test as well, seeing as she was able to eradicate almost all of the target language-related errors that had been present on the pre-test. The fact that the post-test was administered a week after the final treatment session suggests that her improvement was somewhat durable, although further delayed assessments would be needed to confirm this.

Indirect questions remain a difficult grammatical structure, so much so that even native speakers struggle to produce them (Larsen-Freeman & Celce-Murcia, 2015). However, giving a learner the chance to practice production as outlined in DeKeyser and Sokalski (1996) in tandem with the consciousness-raising that Socratic questioning provides appears to yield compelling results. Emily's success on the post-test lends credence to Ellis' (2006) claim that the inductive approach is more suited to complex grammatical structures, given the complicated process of embedding required in the formulation of indirect questions.

The effectiveness of the treatment is even more interesting when one considers the learner's demographic. Based on Wright's (2013) assertions as well as my own experience, most language instructors in East Asian countries like Japan, China, and Taiwan rely heavily on deductive methods, especially when it comes to grammar teaching. This notion was confirmed by Emily herself when she said that she had never experienced inductive learning before participating in this study. The fact that the inductive ap-

proach was successful even with a learner who was not familiar or, perhaps, comfortable with it harkens back to Vogel et al.'s (2011) findings. In their study, students who stated that they preferred to learn deductively still benefitted more substantially from the inductive treatment on the immediate post-test. The robust results of research on this approach despite the contention between learners' expectations and preferences should convince educators to attempt inductive teaching in their classrooms.

Although this study serves as compelling support for other research done on the inductive approach, it also displayed some shortcomings. First of all, the findings of this study cannot be generalized to other learning environments due to its focus on a single participant. The more considerable weakness of the present research, however, is the fact that it was not carried out in a communicative context. Due to time constraints and in an attempt to accentuate the effects of the inductive approach combined with Socratic questions, this study omitted almost any kind of communicative practice. While Vogel et al.'s (2011) study did engage students in communicative activities, these tasks seemed difficult to incorporate into Koshi's (1996) Socratic questioning framework. Despite being labeled as task-based (because students can work together to discover rules about the language), Koshi's use of Socratic questions in grammar teaching is predominately concerned with form-focused, consciousness-raising activities. Emily did have the opportunity to practice answering some indirect questions posed by the researcher, but she did not construct any questions herself within the context of a conversation. Therefore, although the participant's improvement on the post-test was impressive, it remains unclear whether or not she can apply her newly acquired grammar to real-world interactions.

Another finding regarding the inductive approach as a whole was the participant's lack of confidence by the end of the treatment sessions. As Emily handed in her post-test, she was worried she had failed miserably. This is not entirely surprising because, as stated in the methods section, her formal English education ended over six years ago and she therefore lacks confidence in her English abilities. However, the fact that the inductive approach, though clearly effective under certain circumstances, falls short of deductive learning in this key area is problematic if one considers its impact on learn-

ers' motivation, self-esteem, and confidence. While students might find it motivating to discover the rules of grammar for themselves (Koshi, 1996), the absence of any kind of confidence-boosting mechanism can ultimately push students' motivation and confidence in the approach in the opposite direction. This could have been the reason why participants in Vogel et al.'s (2011) study perceived that they learned more via the deductive approach when, in fact, they did not. Although Dörnyei (2001) discusses the value in increasing students' autonomy, which the inductive approach seems to accomplish quite well, he also conveys how important it is to protect learners' self-esteem and self-confidence. He poignantly demonstrates this idea through the following metaphor: "Self-esteem and self-confidence are like the foundations of a building: if they are not secure enough, even the best technology will be insufficient to build solid walls over them" (Dörnyei, 2001, "4.4 Protecting the learners' self-esteem..."). In this case, the technology would be the inductive approach, which cannot properly function while the students' self-esteem and confidence are not at their ideal levels. More research needs to question how educators can navigate motivational conundrums such as these within the context of an inductive learning environment.

While the inductive approach supplemented with Socratic questions does seem advantageous for learning complex grammatical structures in a private lesson setting, teachers must be prudent in how they make use of these techniques in the classroom. By embedding inductive learning in a communicative context, teachers can ensure that students will be able to apply the rules they have learned in conversation. Language instructors should also acknowledge the fact that inductive learning may not bolster students' confidence in the same way as other teaching approaches. Precautions to guard against the ensuing demotivation could include providing ample support and encouragement, as well as forewarning the students about the feelings of ineptitude that may be associated with inductive learning. Hopefully, further research focuses more on these important aspects of the inductive approach not only in one-on-one English learning environments, but in other languages and contexts as well.

Conclusion

Overall, the participant's improvement throughout the course of this study is impressive support for the inductive approach. This is especially valuable given the target language and the participant's background. Neither the grammatical construction of indirect questions nor the effect of the inductive approach on East Asian English learners has received much attention in the literature. By combining the guided inductive approach with Socratic questions, this study demonstrated how these techniques can complement each other in the teaching of a complex grammatical structure in such a setting. However, further research should attempt to replicate these findings with the following considerations in mind. First of all, the treatments should be rooted in communicative activities to give learners the ability to utilize their newly acquired grammatical knowledge within the context of a conversation. Despite the controversy surrounding Krashen's (1981) claims, it is difficult to argue with the naturalist idea that explicit knowledge cannot become implicit, which suggests that the acquisition of a form for real-world use requires practice. In addition, researchers and instructors alike should work to develop a way for learners to gain confidence through the inductive approach. Students in Vogel et al.'s (2011) study did not prefer the inductive approach over deductive learning, nor did Emily in this study have the confidence that would be expected of someone who has improved sufficiently on a grammar point throughout the course of several treatment sessions. So, one problem with inductive learning is how it is perceived by learners. It seems, however, that further research is warranted, seeing as the inductive approach has yielded positive results in both this study and many others. Knowing how to better implement inductive learning in the framework of a communicative, motivational classroom will allow teachers to adjust to the needs of their students and use this approach to its fullest potential.

References

- DeKeyser, R. M., & Sokalski, K. J. (1996). The differential role of comprehension and production practice. *Learning Language*, 46(4), 613-642. doi:10.1111/j.1467-1770.1996.tb01354.x

- Dörnyei, Z. (2001). *Motivational strategies in the language classroom*. [Kindle book]. Cambridge, UK: Cambridge University Press.
- Ellis, R. (2006). Current issues in the teaching of grammar: An SLA perspective. *TESOL Quarterly*, 40(1), 83-107. doi:10.2307/40264515
- Erlam, R. (2003). The effects of deductive and inductive instruction on the acquisition of direct object pronouns in French as a second language. *The Modern Language Journal*, 87(2), 242-260.
- Haight, C., Herron, C., & Cole, S. P. (2007). The effects of inductive and deductive instructional approaches on the learning of grammar in the elementary foreign language classroom. *Foreign Language Annals*, 40, 288-311. doi:10.1111/j.1944-9720.2007.tb03202.x
- Herron, C., & Tomasello, M. (1992). Acquiring grammar structures by guided induction. *The French Review*, 65, 708-718.
- Koshi, A. K. (1996). Holistic grammar through Socratic questioning. *Foreign Language Annals*, 29(3), 403-414. doi:10.1111/j.1944-9720.1996.tb01252.x
- Krashen, S. D. (1981). *Second language acquisition and second language learning*. Oxford: Pergamon.
- Larsen-Freeman, D., & Celce-Murcia, M. (2015). *The Grammar Book* (3rd ed.). Boston, MA: Heinle Cengage Learning.
- Lyster, R., & Saito, K. (2010). Oral feedback in classroom SLA. *Studies in Second Language Acquisition*, 32, 265-302. doi:10.1017/S0272263109990520
- McLaughlin, B. (1978). The monitor model: Some methodological considerations. *Language Learning*, 28(2), 309-332.
- Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 50(3), 417-528. doi:10.1111/0023-8333.00136
- Robinson, P. (1996). Learning simple and complex second language rules under implicit, incidental, rule-search, and instructed conditions. *Studies in Second Language Acquisition*, 18, 27-77.
- Rosa, E., & O'Neil, M. D. (1999). Explicitness, intake, and the issue of awareness: Another piece to the puzzle. *Studies in Second Language Acquisition*, 21, 511-556.
- Shaffer, C. (1989). A comparison of inductive and deductive approaches to teaching foreign languages. *Modern Language Journal*, 73, 395-403.
- Vogel, S., Herron, C., Cole, S. P., & York, H. (2011). Effectiveness of a guided inductive versus a deductive approach on the learning of grammar in the intermediate-level college French classroom. *Foreign Language Annals*, 44(2), 353-380. doi:10.1111/j.1944-9720.2011.01133.x
- Wright, C. (2013). An investigation of working memory effects on oral grammatical accuracy and fluency in producing questions in English. *TESOL Quarterly*, 47(2), 352-374. doi:10.1002/tesq.68