The Effects of Deductive and Guided Inductive Instructional Approaches on the Learning of Grammar in the Elementary Foreign Language College Classroom

Carrie E. Haight
Emory University

Carol Herron
Emory University

Steven P. Cole
Research Design Associates

Abstract: This study investigates the effectiveness of deductive and guided inductive approaches for teaching grammar in college French classrooms. Forty-seven second-semester French students were taught eight grammatical structures: four with a deductive instructional approach and four with a guided inductive instructional approach. A quasi-experimental within-subjects design featuring pre- and posttests and eight immediate posttreatment quizzes assessed the long- and short-term gains in grammatical knowledge for each condition. Results indicated a significant difference between participants’ mean immediate test scores favoring the guided inductive approach. Findings of this study also indicated a strong trend in favor of guided induction on the long-term learning of grammatical structures. The results of this study support using a guided inductive instructional approach to teach grammar in the beginning-level foreign language classroom.

Key words: deductive, guided inductive, instructional approaches, PACE, technology

Language: French, relevant to all languages

Carrie E. Haight (MA, University of Pittsburgh) is a graduate student and Instructor in French and Educational Studies at Emory University in Atlanta, Georgia.

Carol Herron (PhD, University of Wisconsin-Madison) is Professor of French, Director of the Doctoral Program in French and Educational Studies, and Director of the Language Center at Emory University in Atlanta, Georgia.

Steven P. Cole (PhD, Emory University) is Director of Research at Research Design Associates, Inc., in Atlanta, Georgia, and New York City, and Adjunct Professor in the Department of Psychology at Emory University in Atlanta, Georgia.
Introduction

What is the most effective approach to teaching grammar in a foreign language classroom? Throughout the history of second language and foreign language instruction, most researchers and instructors have agreed that pedagogical practices make a difference in language learning (Arteaga, Herschensohn, & Gess, 2003; Ask, 2005; Ellis, 1990; Larsen-Freeman, 2003; Lee & Valdman, 2000; Lightbown, 1998; Lightbown & Spada, 1990; Long, 1983; Spada & Lightbown, 1993; VanPatten, 1996). This discussion of which instructional approaches are most effective in foreign language learning in the classroom environment has taken several forms. One of the most frequently debated and unanswered questions on the subject of effective language learning concerns the issue of whether students should be taught to focus on the rule before using the structural forms (the deductive approach) or to use the grammatical structures in a functional practice session before the rule presentation (the inductive approach). The aim of this study was to investigate whether various rule explication techniques should precede or follow a focus on the use of grammatical forms.

This question was studied by comparing the effectiveness of a traditional deductive instructional approach, which focused on form first, and a guided inductive instructional approach, which focused first on a specific function of the language linked to a specific context and meaning. For example, in order to teach French relative pronouns using the guided inductive approach, students were exposed first to this grammar point through a contextualized activity, entirely in French, in which they used relative pronouns to link ideas. This activity was followed by an instructor and student exchange in French of how the grammatical pattern functions. In the deductive approach, the instructor first exposed students to relative pronouns through an explanation in French of how relative pronouns function with the help of sample sentences. This instructor's explanation was followed by the students practicing the use of the new form in a contextualized activity, entirely in French. Generally, in a deductive approach the analysis of the targeted grammar structure precedes practice exercises and activities (Erlam, 2003; Hammerly, 1975; Larsen-Freeman, 2003).

Where there appears to be little variety in deductive approaches, guided inductive instructional approaches in language classrooms take on many forms and several strategies coexist. Some rely on the students to induce the rule themselves (Rosa & O'Neill, 1999; Shaffer, 1989). Other strategies use guided inductive techniques that focus students' attention on the structure through a series of leading questions (Herron & Tomasello, 1992). Adair-Hauck, Donato, and Cumo-Johanssen's (2005) PACE model teaches grammar through targeted structures that are embedded naturally in a presentation text. More specifically, the P in PACE stands for the presentation of the structure through a story or contextualized examples. The A stands for attention; once the material is presented, the instructor calls learners' attention to a particular form through a practice session of examples. The C stands for a coconstruction phase in which both the instructor and the learners engage in a discussion seeking to develop an explanation or generalization about the form in question. Finally, the E stands for extension activity, which provides the learners with an opportunity to use the structure once the rule has been discovered.

The primary goal of this study was to investigate the effectiveness of guided inductive and deductive instructional approaches on the learning and retention of grammatical structures in an elementary-level French college classroom. In particular, this study examined a traditional deductive instructional approach consisting of presenting a grammatical rule before practice, and a guided inductive instructional approach modeled after the PACE model (Adair-Hauck, Donato, & Cumo-Johanssen, 2005).
and the guided inductive model (Herron & Tomasello, 1992). The implemented deductive and guided inductive approaches are described in detail below.

Review of Previous Research

Despite disagreement among cognitive psychologists and linguists on the question of how best to learn a second or foreign language, many in the fields agree that some element of formal instruction is necessary for acquisition to occur (Chaudron, 1988; Long, 1991; Rutherford & Sharwood Smith, 1988). The history of language learning strategies has oscillated between form-focused instruction, emphasizing accuracy, and meaning-focused instruction, emphasizing context and communication. In general, research suggests that focusing on form in a communicative language classroom is a more effective technique for teaching grammar than focusing on form alone or focusing purely on communication (Doughty & Williams, 1998a, 1998b; Fotos, 1993; Fotos & Ellis, 1991; Schmidt, 1990). Related to the issue of how best to focus on form in the communicative classroom, theorists question how soon language learners should engage in the actual production of newly explained grammatical patterns. (For a discussion on input processing vs. output-based instruction, see VanPatten, 1996.)

The general consensus among professionals in the fields of second and foreign language learning concerning the debate over inductive vs. deductive instructional approaches, the focus of this study, points to an approach that falls somewhere in between the two approaches (Adair-Hauck, Donato, & Cumo-Johanssen, 2005; Felder, 1995; Hammerly, 1975; Larsen-Freeman, 2003; Shaffer, 1989). Today, an abundance of theoretical literature exists concerning the cognitive constructs of both inductive and deductive instructional approaches in foreign language learning and instruction (DeKeyser, 1998; Doughty & Williams, 1998a; Robinson, 2001).

Discussions on inductive and deductive instructional approaches have been linked to theories of implicit and explicit grammar instruction (DeKeyser, 1997; Ellis, 1994; Norris & Ortega, 2000). An explicit approach to teaching grammar features instructor explanations of rules followed by practice exercises (Adair-Hauck, Donato, & Cumo-Johanssen, 2005). On the other hand, an implicit approach to grammar instruction refutes the need for any explicit focus on form, as researchers argue that students can acquire language naturally if exposed to enough comprehensible input (Krashen, 1982; Terrell, 1977). Adair-Hauck, Donato, and Cumo-Johanssen (2005) emphasize that although the explicit and implicit camps are diametrically opposed, they share a failure to acknowledge the role students can play in grammar instruction i.e., collaborating with the instructor or testing their own hypotheses while discovering grammatical explanations. Adair-Hauck, Donato, and Cumo-Johanssen call for a reappraisal of language instruction that moves beyond the dichotomies of explicit vs. implicit grammar instruction and actively involves students and instructors in conversations about grammar as in the guided participatory approach of the PACE model.

Despite a strong theoretical groundwork on approaches to teaching and learning grammar, relatively few research studies have been conducted on guided inductive vs. deductive foreign language teaching strategies. Previous studies on the effectiveness of inductive vs. deductive instructional approaches produced a variety of conflicting results (Abraham, 1985; Erlam, 2003; Herron & Tomasello, 1992; Robinson, 1996; Rosa & O’Neill, 1999; Seliger, 1975; Shaffer, 1989). In addition to mixed results concerning the effectiveness of one approach over the other, each study has used slightly different inductive strategies. In some studies, the inductive approach entailed students completing sentences after practice activities with no explicit attention given to the
rule (Abraham, 1985; Herron & Tomasello, 1992). Other studies asked students to verbalize the rule after the presentation and practice (Shaffer, 1989), or asked students to look for the rule during and after presentation and practice (Rosa & O'Neill, 1999). One study (Seliger, 1975) gave students the rule at the end of the targeted structure lesson. More recently, Erlam (2003) used an inductive approach that lacked explicit attention, elicitation, or explanation of the grammatical rule in question. Other features differentiating these previous studies include the nature of the body of participants and the number of grammatical structures used to investigate the effectiveness of the two approaches. Two of the studies used high school students as their primary participants (Erlam, 2003; Shaffer, 1989), while the remaining studies focused on college students. Robinson's (1996) and Erlam's (2003) studies measured inductive and deductive instructional approaches on only one structure, whereas the other studies used several grammatical structures to test their hypotheses.

The diversity of research design with regard to scope, treatment conditions, participants, and proficiency levels undoubtedly contributed to the variations observed in the results of these studies. Three studies reported no significant differences between the two instructional approaches (Abraham, 1985; Rosa & O'Neill, 1999; Shaffer, 1989). Erlam (2003), Robinson (1996), and Seliger (1975) reported that the deductive approach was more effective. Herron and Tomasello (1992) concluded that the guided inductive approach was the most effective in the learning and retention of grammatical structures. Although no significant differences between the two approaches were found in the Shaffer (1989) study, the inductive condition did indicate positive benefits to student learning.

Statement of the Problem

Since the adoption of communicative language teaching with a stress on developing students' proficiency, and students' accuracy in particular, the issues surrounding the question of how best to teach grammar in a foreign language classroom have increased in importance. Yet classroom research exploring the benefits of inductive and deductive grammatical instruction remains limited. The focus of this study was to compare two specific pedagogical strategies for teaching grammar through guided induction or deduction in the foreign language classroom. While some researchers (Larsen-Freeman, 2003; Lee & VanPatten, 1995) stress the benefits of teaching foreign language grammar with less of a focus on rules and extensive explanations, teaching strategies appear not to have evolved in terms of how grammar is taught. Lee and VanPatten (1995) argue that although language classrooms are becoming more communicative, instructors still are insisting on teaching grammar explicitly. With many textbooks and instructors still presenting foreign language grammar explanations deductively, we framed this study around the following research questions:

1. Which instructional approach, deductive or guided inductive, will be more effective on elementary French students' (FR 102) short-term learning of grammatical structures?
2. Which instructional approach, deductive or guided inductive, will be more effective on FR 102 students' long-term learning and retention of grammatical structures over the course of the semester?

Methodology

Definition of Terms

The deductive approach featured in this investigation focused on the explicit explanation of grammatical structures and rules. Deductive instruction focused on form before meaning. The deductive instructional strategies for each targeted structure began with the analysis of the targeted grammatical structure. The instructor stated the rule and then illustrated it with sample sentences written on the board. This rule statement and brief illustration were followed by the students using the
structure in an oral practice session. The practice activity, presented via PowerPoint, consisted of 10 additional contextualized examples of the targeted structure in use. Student responses during the oral practice activity were done chorally. Students did not take notes during the deductive presentation. (See Appendix A for a detailed script of a deductive lesson plan.)

The guided inductive approach in this study began with the students using the targeted grammatical structure in the same oral practice session that the students had completed in the deductive condition. Once again, this practice session, cued via PowerPoint, consisted of 10 contextualized examples of the targeted structure. As in the deductive condition, student responses during the oral contextualized activity were done chorally. However, the analysis of the structure followed rather than preceded this oral practice session. Unlike the deductive condition, at no point in the guided inductive condition did the participants receive explicit explanation of the rule from the instructor. Instead, learners, with instructor assistance, analyzed the same sample sentences featured in the deductive condition rule illustration. This time, however, the model sentences contained blanks for the missing targeted structure. The instructor asked the students a series of guiding questions that led them to fill in the blanks in each sample sentence with the correct missing targeted structure. Through the series of guiding questions, the students and instructor collaborated and interacted to coconstruct the grammatical rule together. Students did not take notes during the guided inductive instruction.

The guided inductive approach used in this study combined characteristics of both the guided inductive model (Herron & Tomasello, 1992) and the PACE model (Adair-Hauck, Donato, & Cumo-Johanssen, 2005). As in the Herron and Tomasello model for teaching grammar inductively, the participants in this study were asked to orally complete fill-in-the-blank sample sentences using the grammatical structure in question after an oral contextualized practice session. Similar to the PACE model's coconstruction stage, the instructor asked the students leading questions about the use of the structure in the contextualized oral examples they had practiced. The students, in turn, chorally verbalized their responses, received feedback from the instructor, and acquired their own meaning of the grammatical structure's use and form.

The guided inductive approach tested in this study was modeled after the PACE model. However, it is important to distinguish between the two models, in particular the coconstruction phase of the PACE model vs. the coconstruction method used in this study's guided induction model. In the guided inductive approach, students were asked to answer scripted questions about the grammatical pattern and to articulate the pattern in fill-in-the-blank sentences. It was necessary to script, prior to the onset of the study, the question and answer exchanges between the instructor and students so that all students in the guided inductive condition would be exposed to the same coconstruction of the targeted grammar point. These scripted question and answer exchanges about grammar are in line with the principles of collaboration in the PACE model. Both the PACE model and the guided inductive model stress the importance of the instructor using leading questions to guide learners to discover grammatical patterns. However, in the PACE model, during the coconstruction phase, instructors sometimes will adapt their questioning based on the students' understanding of the pattern in question. This improvised questioning based on learners' understanding, not possible within the empirical constraints of the current study, marks a primary difference between this study's guided inductive approach and that used in the PACE model.

Both the inductive PACE model and the guided induction model are supported by sociocultural and constructivist theories of learning (Lantolf, 2000; Reagan & Osborn, 2002; Stevick, 1996; Vygotsky, 1978, 1986) that argue in favor of indi-
vidual processing of stimuli, or in our case knowledge, in order for the development of cognitive structures to occur. The instructor and the learner construct an understanding of a linguistic structure together through a series of student-instructor interactions. Individual learners actively build their own linguistic system and skills, thereby playing an active role in the learning process. (See Appendix B for a detailed script of a guided inductive lesson plan.)

Participants and Setting
The participants in this study were 47 college students enrolled in four sections of a second-semester French course (FR 102) at a medium-sized southern private liberal arts college. Testing and procedures related to the study took place during participants' regularly scheduled class time. Initial data were collected from 68 participants. However, prior to conducting statistical analyses on the data, a decision was made to include in the analyses only the participants who met the following criteria: (1) they were present for at least three treatment sessions in each condition (six total), (2) they had immediate test scores on at least six of the eight structures (three in each condition), and (3) they were present for both the grammar pretest and posttest. This decision was made so that all participants included in the analyses had an adequate amount of valid data. Forty-seven of the 68 students met these criteria and their scores were retained for data analysis. Of these 47 participants, 21 had immediate test scores for all eight structures, while 21 had test scores for seven structures, and 5 participants had test scores for six structures.

Of the 47 student participants, 18 were freshmen (38%), 13 were sophomores (28%), 9 were juniors (19%), 6 were seniors (13%), and 1 participant (2%) did not report this information. Thirty-one (66%) of the student participants were female and 14 (30%) were male; 2 participants did not report their gender. On average, the body of student participants reported having 1.5 years of previous French study.

The participants were assigned to one of the four course sections through the college registrar system. All of the participants were native or near-native English speakers and nonnative speakers of French. Although this sample was not randomly selected, the four groups were counterbalanced by the empirical within-subjects design described below. The instructors for the four sections were all graduate teaching assistants at the same institution as the participants and were all enrolled in their second year of a PhD program in either French Literature or French and Educational Studies.

General Classroom Procedures
The research procedures for this investigation were integrated into the participants' daily classroom activities. All four of the FR 102 sections met four times a week. All four sections had the same multimedia curriculum, French in Action (Capretz, 1994), a video-based program for teaching French in which students were exposed to native French speakers interacting in everyday authentic contexts. Although all the French grammar explanations occur in the students' workbook rather than in a typical textbook-based program, instructors generally were free to present grammar points either inductively or deductively in class.

Each week the course focused on a different video segment that combined elements of French language and culture. The FR 102 course focused on chapters 16 to 31. Students spent approximately 4 hours in class and an estimated 1.5 hours outside of class each week working on workbook and audio materials that were contextualized to the in-class video story. Daily classroom activities typically included the viewing and discussion of the weekly video with the guidance of the instructor. During or after the viewing of the video, instructor checked students' comprehension of the video text and new vocabulary through guiding questions or individual, pair, or group activities. After working with the video, instructors generally presented new vocabulary or new grammar points to the
students through contextualized presentations, oral and written, that reinforced meaning through the use of visuals, synonyms, examples, contextual clues, word families, etc. Technologically enhanced media (e.g., video, the Internet, PowerPoint presentations), illustrating authentic cultural materials and grammar in use, played a central role in the daily classroom activities of all four sections. On most Fridays, students would have a quiz on the material covered during the week.

In order to test the effectiveness of the two teaching approaches on the learning and retention of French grammar, student participants in this study were taught over the course of one semester eight new grammatical structures embedded in their weekly video lessons. The grammatical structures chosen for this study followed the chronology of the course textbook and were generally taught in one-week intervals. The chosen structures also lent themselves to an oral contextualized activity through which the linguistic pattern could be clearly illustrated in a practice session of 10 examples. For each of the eight structures, a deductive or a guided inductive lesson plan, presentation, and script designed by the researchers were given to the instructors prior to the teaching of the targeted structure. (See Appendix C for a list of the grammatical concepts and rules.) Instructors were asked to follow the lesson plan script for each targeted grammatical structure while presenting the given lesson. Only one grammatical structure was presented per class period. Each presentation of a targeted structure lasted approximately 10 minutes. After each grammatical form had been presented, instructors were asked to administer and collect the quiz instruments and return them for scoring to the primary investigator. (See Appendix D for an example of an immediate quiz.)

Throughout the course of the semester, the primary investigator conducted classroom observations for each instructor in order to assess possible teacher-effect variables, such as the instructors' adherence to the scripted lesson plan, that could have confounded the effect of the different treatments. During these observations, the principal investigator assumed the role of a nonparticipant observer and focused on each instructor's adherence to the lesson plan script as well as on classroom activities following the grammar lessons.

**Target Structures**

Eight grammatical structures in French were chosen from the students' curriculum. The first of the eight structures tested in this study was assigned to two of the four sections to be taught deductively, while the remaining two sections were taught the first grammatical structure with the guided inductive approach. The following week, the two groups (each group consisting of two sections) were taught the second grammatical structure in the opposite teaching instructional approach from week one. The instructors for the four sections continued to alternate between the two instructional conditions for the remaining structures. The within-subjects design process of alternating the instructional approach for each structure and for each group allowed for equal representation of each participant and each instructor in each condition. It is important to point out that the comparison of the two instructional approaches for any one structure is not wholly valid because its teaching in the two conditions was done by different instructors. The appropriate comparisons can be made only across all structures taking advantage of the counterbalanced within-subjects design. A list of the grammatical structures and the counterbalanced design for the instructional approaches used to teach each structure are found in Table 1.

**Instrumentation and Testing Procedures**

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

### TABLE 1

<table>
<thead>
<tr>
<th>Structure</th>
<th>Class Sections</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. adverbial pronoun <em>en</em></td>
<td>Sections A and B</td>
<td>Inductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Deductive</td>
</tr>
<tr>
<td>2. adverbial pronoun <em>y</em></td>
<td>Section A and B</td>
<td>Deductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Inductive</td>
</tr>
<tr>
<td>3. indirect object pronouns</td>
<td>Sections A and B</td>
<td>Inductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Deductive</td>
</tr>
<tr>
<td>4. imperative + pronouns</td>
<td>Sections A and B</td>
<td>Deductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Inductive</td>
</tr>
<tr>
<td>5. verb with <em>a</em> + indirect object <em>plaire</em></td>
<td>Sections A and B</td>
<td>Inductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Deductive</td>
</tr>
<tr>
<td>6. relative pronouns</td>
<td>Section A and B</td>
<td>Deductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Inductive</td>
</tr>
<tr>
<td>7. demonstrative pronouns</td>
<td>Sections A and B</td>
<td>Inductive</td>
</tr>
<tr>
<td></td>
<td>Sections C and D</td>
<td>Deductive</td>
</tr>
<tr>
<td>8. partitive articles</td>
<td>Sections A and B</td>
<td>Deductive</td>
</tr>
</tbody>
</table>

### Background Questionnaire

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

### Grammar Pretest

The grammar pretest was administered to participants at the beginning of the semester, prior to the treatment phase, in order to assess the comparability of grammar knowledge between the four sections. Each item on the grammar pretest consisted of a stem and five multiple-choice responses focusing on one of the eight grammatical structures taught during the treatment phase. The grammar test contained 16 items and possible test scores ranged from 0 to 16 points. The grammar pretest featured two items testing each of the eight grammatical patterns that were to be taught in the two treatment conditions (see Appendix F).

### Grammar Posttest

The grammar posttest was identical to the grammar pretest. At the end of the semester, 14 weeks after the pretest, the grammar posttest was administered to the participants to measure the long-term learning of the grammatical structures as well as the effectiveness of each presentation approach. Even though at the time of the pretest, the pretest items were not categorized as having been taught through either the guided inductive or deductive approach, at the end of the semester, the investigators were able to associate individual items on the grammar posttest to the students according to the condition in which they had originally learned the structure, thus making the long-term analysis possible (see Appendix F).

### Immediate Quizzes

A quiz was administered to the students following the instruction of each grammatical structure. There were a total of eight quizzes, one for each of the eight
targeted grammatical structures. The same quiz was used for both instructional treatments. Each of the quizzes contained four fill-in-the-blank items testing the targeted grammatical structure presented in class, and each took approximately 5 minutes to complete. Possible quiz scores ranged from 0 to 4 points (see Appendix D).

Results
Preliminary Analyses
In order to assess the possible variability in grammar knowledge between the four participating class sections of FR 102, a one-way analysis of variance (ANOVA) was conducted to compare participants' mean total pretest percentage scores before the beginning of the treatment period. The results of this comparison indicated that there were no statistically significant differences for student performance on the grammar pretest, $F(3, 43) = .167, p = .918$ (see Table 2).

Tests of Research Questions
Question 1: Which instructional approach, deductive or guided inductive, will be more effective on elementary French students' (FR 102) short-term learning of grammatical structures?
In order to assess the effect of the deductive vs. the guided inductive approach on participants' short-term learning of grammatical structures, a paired samples $t$ test was conducted on total guided inductive and deductive quiz scores for each participant. Mean proportions for the two conditions are presented in Table 3. Once again, it is important to emphasize that the comparison in the case of any one structure is not wholly valid because its teaching in the two conditions was done by different instructors. For purposes of statistical analyses, each student received one score for each condition. One score was the percent correct in the deductive condition and the other score represented the percent correct in the guided inductive condition. For example, if a student was present for all four grammar lessons in the deductive condition, then a student's percent correct score was calculated out of a total score of 16 points (four quizzes times four points per quiz). If a student missed class on the day the structure was introduced and tested in the deductive condition, that structure was not counted and the student's percent correct score was calculated out of a total score of 12 points (three quizzes times four points per quiz). Student scores in the guided inductive condition were calculated in the same manner. Immediate quiz scores were calculated at the end of the treatment phase in order to assess whether the deductive or the guided inductive instructional approach was more effective on the short-term learning of French grammatical structures. This analysis indicated that the mean grammar quiz scores for students' performance in the guided inductive instructional condition were significantly greater than the mean scores in the deductive condition, $t(46) = 2.32, p = .025, \eta^2 = .105$ (see Table 3).

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>French 102 Grammar Pretest Scores (and Standard Deviations) by Section ($N = 47$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>35.90 (7.90)</td>
</tr>
<tr>
<td>1</td>
<td>39.73 (16.00)</td>
</tr>
<tr>
<td>2</td>
<td>35.71 (16.88)</td>
</tr>
<tr>
<td>3</td>
<td>37.50 (15.67)</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>TABLE 3</th>
<th>French 102 Immediate Quiz Mean Scores (and Standard Deviations) by Instructional Approach ($N = 47$)</th>
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</thead>
<tbody>
<tr>
<td>Condition</td>
<td>Deductive</td>
</tr>
<tr>
<td>Immediate Quiz Score</td>
<td>85.77 (16.00)</td>
</tr>
</tbody>
</table>
Question 2: Which instructional approach, deductive or guided inductive, will be more effective on FR 102 students' long-term learning and retention of grammatical structures over the course of the semester?

In order to examine the effect of the two teaching approaches (guided inductive and deductive) on the long-term learning of grammatical structures, a two (deductive, inductive) x two (deductive, guided inductive) repeated measures ANOVA was conducted. The results indicated a significant main effect for time, $F(1, 46) = 96.41, p = .000, \eta^2 = .677$, indicating an overall improvement in grammar knowledge over the course of the semester. The results also indicated a significant main effect for method, $F(1, 46) = 4.32, p = .043, \eta^2 = .086$. The time x method interaction, $F(1, 46) = 3.97, p = .05, \eta^2 = .080$, indicated a strong trend favoring a greater increase in scores for students in the guided inductive treatment condition than in the deductive condition. The grammar pretest-to-posttest score increases were significant for both the guided inductive, $t(46) = -8.77, p = .000, \eta^2 = .626$, and the deductive conditions, $t(46) = -5.00, p = .000, \eta^2 = .438$; however, the percentage score increase for the guided inductive condition (27.94 points) was greater than the increase for the deductive condition (19.47 points). Overall the results of this analysis support the notion that the guided inductive instructional approach has significant positive effects on the long-term learning of grammatical structures when compared to the deductive approach. Table 4 presents the total grammar pretest and posttest means and Table 5 presents the grammar posttest means for each instructional condition.

### Discussion

#### Limitations and Strengths

Limitations are inherent in all studies involving classroom research. The findings from this study may not be generalizable to populations of second-semester French students outside of the academic setting where this study took place. Additionally, in terms of assessing language skills, this study focused only on the effects of the deductive and guided inductive instructional approaches on written grammar skills. Researchers did not collect data concerning the students' oral production of the targeted structures during regular class time. It is necessary to note as well that this study's findings pertain only to one particular level of French students. Future research will need to be conducted to assess not only the method of delivery and a greater number of structures, but also the effectiveness of various instructional approaches on the learning and retention of grammatical structures in multiple language learning populations.

It should be emphasized that only one type of deductive approach and one type of inductive approach were tested in this study. Future work on this topic may benefit from looking at the effectiveness of more than one inductive instructional approach, as well as examining the effects of such strategies on other foreign language skills.

### Table 4

<table>
<thead>
<tr>
<th>French 102 Grammar Pretest and Posttest Means (and Standard Deviations) ($N = 47$)</th>
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<tr>
<td></td>
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<tr>
<td>Total Score</td>
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</tbody>
</table>

### Table 5

<table>
<thead>
<tr>
<th>French 102 Grammar Posttest Means (and Standard Deviations) by Instructional Approach ($N = 47$)</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Posttest</td>
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</table>
Finally, the possibility of crossover effects, or rather changes in the performance of the participants due to their repeated exposure to the two treatment conditions, also may limit the significance of the findings. However, the within-subjects design of this study minimizes the possibility of carryover effects because structures generally were taught one week apart. In addition, the alternation of instructional approaches between the four sections allowed for equal representation of each participant and each instructor in each condition, counterbalancing practice effects.

Additional strengths of this study and its design included the highly detailed, clear, and uniform lesson plans and scripts. All of the treatment procedures were designed as an integral part of typical foreign language classroom activities in order to avoid disruption of the language learning process. Additionally, as the findings demonstrate, all students participating in this study illustrated overall improvement in their French grammar knowledge over the course of the study. This study's findings contribute another chapter to the longstanding debate over the deductive vs. inductive instructional approach in foreign language pedagogy. The results of the research questions present statistically significant evidence in favor of the effects of the guided inductive instructional approach over the deductive instructional approach on the short-term learning of the eight grammatical structures targeted, and show a positive trend in favor of the effects of the guided inductive approach over the deductive approach on the long-term learning of these same structures.

The Learning of French Grammar

The results of the analyses testing the short-term effectiveness of the two instructional approaches indicate that the guided inductive approach had a significantly greater effect on FR 102 students' immediate learning of grammar than the deductive approach. The results of the analyses testing the long-term effectiveness of the two approaches support and are consistent with the results of the short-term learning analyses in favor of a guided inductive strategy.

Several pedagogical and theoretical frameworks support the effect of the guided inductive instructional approach illustrated by these findings. This study's findings align with cognitive theories of learning that view learning as active development involving a process of problem solving and engagement on the part of the learner. Such active engagement in language learning is necessary for the construction of the language itself through the processing of linguistic data and the testing of hypotheses (Herron & Tomasello, 1992; Tomasello, 2003).

In addition, the results of this study favor guided inductive instructional approaches that support learning through hypothesis testing (Bley-Vroman, 1986). Learners are encouraged to take in and transform input, form and test hypotheses, and draw conclusions based on the input and their hypotheses. Moreover, contemporary constructivist theories of learning (Fosnot, 1996; Reagan & Osborn, 2002) call for an approach to teaching and learning that incorporates active engagement on the part of the student rather than the learning of facts and techniques, strategies that are often linked to the deductive approach. Such theories on education highlight intuition, or rather the mental process of understanding formulae and structures without learning them through a detailed step-by-step process, as a critical feature of creating knowledge and thinking productively.

Furthermore, the language learner's testing of linguistic hypotheses on mature speakers of the language that characterizes a guided inductive approach reinforces Vygotsky's (1978, 1986) work on social cognition and interaction. Vygotsky attributes the development of cognitive skills to a dialectical process between the learner and an instructor. The learner acquires knowledge with the guidance of an instructor through a problem-solving process. A
learner's zone of proximal development, or rather the gap between the student's capabilities and the learning task at hand, is bridged by the guidance of the instructor. The guided questions, the verbalization of question responses by the students, and their verbalization of the grammatical rule itself featured in this study's guided inductive instructional approach parallels this process of expert-novice interaction.

The findings from this study support learning a foreign language through contextualized input. The instructional approaches featured in this study exposed students to language in context via meaningful PowerPoint presentations that focused on contemporary, culturally relevant material. The same contextualized practice exercises could be presented without the aid of PowerPoint in classrooms where technologically enhanced learning tools and materials are not available. However, a distinct advantage of PowerPoint is that it not only allows language instructors to build instructional materials featuring practical, current, and meaningful content, but it also serves as a medium that can be stored digitally on a Web site such as Blackboard, thus enabling instructors to share creative inductive exercises or adapt existing presentations to their liking or their needs. The creation of guided inductive lessons with or without the use of technology takes time and innovation; however, based on this study's findings, this extra time and creativity in lesson planning seems worthwhile. With the continued creation, use, and communal storage of guided inductive PowerPoint presentations, it may no longer be necessary for each instructor (particularly those inclined to use deductive techniques or reluctant to use technology in the classroom) to write from scratch guided induction or PACE activities. Guided inductive PowerPoint presentations also may be used as models in training teachers to teach grammar through guided induction.

Conclusion

This study was built on prior research examining inductive and deductive strategies in second language and foreign language classrooms, and pushed the debate a step further by incorporating an instructional approach enhanced by the technological presentation features of PowerPoint. Perhaps the results of this study—supporting the benefits of guided induction and the active role of language learners in the coconstruction of meaning and form—will help shift the focus of grammar instruction away from the commonly experienced deductive presentations of grammatical structures in both classrooms and textbooks. We hope the findings will inspire continued classroom research on how best to teach grammar in a proficiency-oriented, standards-based foreign language classroom.

References


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**APPENDIX A**

**FR 102 Deductive Lesson Plan**

**Deductive Lesson Plan for the PARTITIVE**

*(Scripted text is presented in bold.)*

**Context:** La nourriture! [Food !]

Teacher: Aujourd'hui nous allons apprendre à parler de la nourriture.

[Today we are going to learn how to talk about food.]

**I. RULE**

Teacher: En français nous utilisons l'article partitif *(du, de la, de l', des)* devant des noms de choses qu'on ne peut pas compter pour indiquer une partie ou une quantité indéterminée des choses. Regardons quelques exemples.

[In French the partitive article *(du, de la, de l', des)* is used before nouns that one cannot count to indicate a part of or an undetermined quantity of something. Let's look at a few examples.]

**II. INTRODUCTION AND SAMPLE SENTENCES ILLUSTRATING THE RULE.**

***Please write numbered sentences below on board***

Teacher : Dans la vidéo Robert et Mireille vont chez Madame Courtois pour le diner.

[In the video, Robert and Mireille go to Madame Courtois' house for dinner.]

1. Comme entrée ils prennent de la salade.

   [For a starter they have some salad.]

2. Comme plat principal ils prennent du poulet.

   [For the main course they have some chicken.]

3. Comme boisson ils prennent de l'eau minérale.

   [For a beverage they have some mineral water.]
III. PRACTICE SESSION CUED BY POWERPOINT
Teacher: Imaginez que nous sommes au bistro. Dites ce que nous prenons.
[Imagine that we are at the bistro. Say what we (will) have.]

Slide # 1  Teacher: Nous aimons le Coca-cola. [We like Coke.]
Students: Alors, nous prenons du Coca-Cola. (Répétez)
[Then we (will) have Coke. (Repeat)]

Slide # 2  Teacher: Nous aimons la pizza. [We like pizza.]
Students: Alors, nous prenons de la pizza. (Répétez)
[Then we will have pizza. (Repeat)]

DRILL: REPEAT PATTERN
(3 for each article) Follow model slide format for examples.

Teacher: Nous aimons . . . [We like . . .]
Students: Alors, nous prenons . . . [Then we will have . . .]

Slide # 3  le gazpacho [gazpacho]
Slide # 4  le fromage [cheese]
Slide # 5  le poisson [fish]
Slide # 6  la salade [salad]
Slide # 7  la viande [meat]
Slide # 8  la soupe [soup]
Slide # 9  l'agneau [lamb]
Slide # 10 l'eau minérale [mineral water]
Slide # 11 l'artichaut [artichoke]
APPENDIX B

FR 102 Guided Inductive Lesson Plan

Guided Inductive Lesson Plan for the PARTITIVE
(Scripted text is presented in bold.)

Context: La nourriture! [Food!]
Teacher: Aujourd'hui nous allons apprendre à parler de la nourriture.
[Today we are going to learn how to talk about food.]

I. INTRODUCTION

***Please do not write any phrases on the board until AFTER the presentation***
Teacher: Dans la vidéo Robert et Mireille vont chez Madame Courtois pour le dîner.
[In the video, Robert and Mireille go to Madame Courtois' house for dinner.]

II. PRACTICE SESSION CUED BY POWERPOINT
Teacher: Imaginez que nous sommes au bistro. Dites ce que nous prenons.
[Imagine that we are at the bistro. Say what we (will) have.]

Slide # 1 Teacher: Nous aimons le Coca-cola. [We like Coke.]
Students: Alors, nous prenons du Coca-Cola. (Répétez)
[Then we (will) have Coke. (Repeat)]

Slide # 2 Teacher: Nous aimons la pizza. [We like pizza.]
Students: Alors, nous prenons de la pizza. (Répétez)
[Then we will have pizza. (Repeat)]

DRILL: REPEAT PATTERN
(3 for each article) Follow model slide format for examples.

Teacher: Nous aimons . . . [We like . . . ]
Students: Alors, nous prenons . . . [Then we will have . . . ]

Slide # 3 le gazpacho [gazpacho]
Slide # 4 le fromage [cheese]
Slide # 5 le poisson [fish]
Slide # 6 la salade [salad]
Slide # 7 la viande [meat]
Slide # 8 la soupe [soup]
Slide # 9 l'agneau [lamb]
Slide # 10 l'eau minérale [mineral water]
Slide # 11 l'artichaut [artichoke]
III. ATTENTION TO FORM AND COCONSTRUCTION OF STRUCTURE

**Please write the numbered sentences below on the board after the presentation.**

1. Comme entrée ils prennent _________ salade.
   [For a starter they have _______ salad.]

2. Comme plat principal ils prennent _________ poulet.
   [For the main course they have _______ chicken.]

3. Comme boisson ils prennent _________ eau gazeuse.
   [For a beverage they have _______ mineral water.]

GUIDED QUESTIONS—Teacher

Voyez-vous une différence entre ces trois noms ? (point to nouns: salade [salad], poulet [chicken], eau gazeuse [mineral water] ) [Do you see a difference between these three nouns?]

“Salade,” c’est un nom masculin ou féminin? Et “poulet”? Singulier ou pluriel ? Et “eau”? [“Salad,” is it a masculine or a feminine noun? And “chicken”? Singular or plural? And “water”?]

Pour ces trois noms, s’agit-il d’une quantité déterminée ou indéterminée ? [For these three nouns are we looking at a determined or an undetermined quantity?]

Complétons les phrases ensemble. (Fill in the blanks.) [Let’s complete the sentences together.]
APPENDIX C

Grammatical Concepts and Rules

(The grammatical concepts and rules used in this study were adapted from Capretz (1994) and Ollivier (1993) for elementary French students' comprehension. The rules used in the study reflect the specific use of the structure in the students' curriculum and therefore may not be comprehensive or complete explanations.)

Concept:  
y [there]

Rule:  
En français, le pronom y remplace la préposition à + nom de lieu. Généralement y est placé devant le verbe. [In French the personal pronoun y [there] replaces the preposition à + a name of a place. The pronoun y is generally placed before the verb.]

Concept:  
en [some/any]

Rule:  
En français, le pronom en remplace une expression partitive (du, de la, de l', ou des + nom). Généralement en est placé devant le verbe. [In French the personal pronoun en replaces a partitive expression (du, de la, de l', ou des [some/any]+ a noun). The pronoun en is generally placed before the verb.]

Concept:  
lui / leur [her/him/them]

Rule:  
En français lui et leur sont des pronoms personnels qui complèment l'objet indirect d'une phrase. Ils répondent à la question « à qui ». Généralement lui et leur sont placés devant le verbe. Les verbes appartenir, demander, sourire, ressembler et téléphoner sont des verbes qui utilisent lui et leur. [In French lui and leur are personal pronouns that complement the indirect object of a sentence. They answer the question “to whom.” They are generally place before the verb. The verbs, appartenir [to belong to], demander [to ask], sourire [to smile], ressembler [to look like], and téléphoner [to telephone] are verbs that use lui or leur.]

Concept:  
imperative and pronouns

Rule:  
En français quand nous donnons un ordre avec un impératif affirmatif le pronom est placé après le verbe. Avec un impératif négatif le pronom est placé devant le verbe et après le ne. [In French when we give orders with an affirmative imperative, the pronoun is placed after the verb. In a negative imperative the pronoun is placed before the verb and after the ne [not].]

Concept:  
plaire [to please/be pleasing to]

Rule:  
En français le verbe trouver a un complément d'objet direct et le verbe plaire a un complément d'objet indirect. [In French the verb trouver [to find] takes a direct object pronoun and the verb plaire takes an indirect object pronoun.]

Concept:  
qui/que [who/whom/that/which]

Rule:  
En français le pronom relatif qui représente le sujet du verbe dans la proposition relative (la deuxième partie de la phrase). Le pronom relatif que représente l'objet direct du verbe dans la proposition relative (la deuxième
partie de la phrase). [In French the relative pronoun qui represents the subject of the verb in the relative clause (the second part of the sentence). The relative pronoun que represents the direct object of the verb in the relative clause (the second part of the sentence).]

**Concept:** demonstrative pronouns

**Rule:** En français les pronoms démonstratifs (celle, celui, celles, ceux) remplacent les adjectifs/articles démonstratifs + nom. [In French the demonstrative pronouns (celle, celui, celles, ceux [that/the one/the ones/he/she] replace demonstrative adjectives/articles + a noun.]

**Concept:** partitive

**Rule:** En français nous utilisons l'article partitif (du, de la, de l', des) devant des noms de choses qu'on ne peut pas compter pour indiquer une partie ou une quantité indéterminée des choses. [In French the partitive article (du, de la, de l', des) [some/any] is used before nouns that one cannot count to indicate a part of or an undetermined quantity of something.]

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**APPENDIX D**

**FR 102 Sample Grammar Quiz**

Quiz : PARTITIVE

Robert et Mireille discutent ce qu'ils prennent normalement pour le petit déjeuner. Remplissez les blancs avec l'article partitif correct (DU, DE LA, DE L’) ou l'article défini (LE, LA, L’). [Robert and Mireille discuss what they normally eat for breakfast. Fill in the blanks with the correct partitive (du, de la, de l’) [some/any] or definite (le, la, l’) [the] article.]

Mireille: Robert, aimez-vous _____ pain français?
[Robert, do you like ______ French bread?]

Robert: Oui je prends _____ pain chaque matin. Et vous?
[Yes, I eat _____ bread each morning. And you?]

[Me too, I love _____ French baguette, but not Marie-Laure. She often eats _____ American cereals.]
APPENDIX E

Background Questionnaire

1. French Instructor: ________________________________

2. Age: ________________________________

3. Nationality: ________________________________

4. Gender (please circle one): Female Male

5. Year in College (please circle one):
   Freshman Sophomore Junior Senior Graduate School

6. Major field(s) of study: ________________________________

7. Minor field(s) of study: ________________________________

8. What is your first language? ________________________________

9. Is this French course an elective or a university requirement?
   □ elective    □ requirement

10. Have you ever studied French before this class?
    □ yes    □ no

11. If yes, please indicate below how long, what year, and at what level:

    | Number of years | When studied | Course name |
    |-----------------|-------------|------------|
    | Junior High/Middle School | _________ | _________ |
    | High School       | _________ | _________ |
    | College/University | _________ | _________ |
    | In France or in   | _________ | _________ |
    | a French-speaking country | _________ | _________ |

12. Have you ever spent time or lived in a French-speaking country?
    □ yes    □ no

    Country(ies): ____________ Length of stay: ____________

13. If you have studied a foreign language other than French, please indicate the language and the number of years studied below.

    Language: ____________ Number of years studied: ____
    Language: ____________ Number of years studied: ____
APPENDIX F

FR 102 Grammar Pre- and Posttest
(* Indicates the correct answer. Original test items are in French. English translations are in brackets.)

Allons en France!! [Let's go to France!!]
Imagine you are discussing an upcoming trip to France with a friend. The following are several sentences discussing life, food, and travel in France. Please read each sentence and circle the word below that correctly completes the sentence. You will not be penalized for guessing and your performance on this test will not affect your course grade.

1. Paris en France? Oui, nous voudrions _____ aller! [Paris in France? Yes, we would like to go_______!]
a. au [to]
b. en [some]
c. y [there] *
d. lui [to her]
e. la [it]

2. Mes parents vont souvent en Europe. C'est la France qui _____ plaît le plus. [My parents often go to Europe. It's France that pleases _______ the most.]
a. la [it]
b. les [them]
c. ils [they]
d. eux [them]
e. leur [them, to them] *

3. Avant de partir pour la France, achetez un nouveau parapluie pour vous protéger contre la pluie. Choisissez _____ - ci, ou _____ - là. [Before leaving for France, buy a new umbrella to protect you from the rain. Choose _______ one or _______ one.]
a. celui, celui [this one, that one] *
b. lesquels, lesquels [which ones, which ones]
c. ce, ce [this, this]
d. ces, ces [this, this]
e. celle, celle [this one, that one]

4. N'oubliez pas de téléphoner à votre agent de voyage. Dites- _____ de vous réserver un hôtel pas très cher. [Don't forget to call your travel agent. Tell _____ to reserve an inexpensive hotel for you.]
a. leur [to them]
b. lui [to her]*
c. le [it]
d. les [them]
e. elle [she]

5. Quand vous cherchez un hôtel sur l'Internet, regardez bien les photos et choisissez _____ qui a une piscine. [When you look for a hotel on the Internet, pay attention to the photos and choose _______ that has a pool.]
a. le [it]
b. en [some]
c. ce [this]
d. celui [the one] *
e. celle [the one]
6. Avant de partir pour la France il faut choisir une ligne aérienne _____ est la plus économique. [Before leaving for France it is necessary to choose an airline _____ is the most economic.]
   a. dont [of which]
   b. ce que [that which]
   c. qui [that]*
   d. que [that]
   e. quel [which]

7. Quand je vais en France je vais souvent à la plage. Quand vous êtes en vacances vous _____ passez du temps aussi ? [When I go to France I often go to the beach. When you are on vacation do you pass time _____ as well?]
   a. en [some]
   b. y [there] *
   c. la [it]
   d. à [to]
   e. où [where]

8. Mon professeur de français visite souvent La Côte d'Azur. La Méditerranéenne _____ plait beaucoup. [My French professor often visits the Côte d'Azur. The Mediterranean really pleases ______.]
   a. la [it]
   b. le [it]
   c. leur [to them, them]
   d. lui [to him, him]*
   e. il [he]

9. Écrivez à vos parents après votre arrivée! Non, _____________ ! Cela prendra trop de temps. [Write your parents after your arrival! Non, _____________! That will take too much time.]
   a. Ne téléphonez pas à votre mère! [Don't call your mother!]
   b. Mangez les frites! [Eat French fries!]
   c. Écrivez une carte postale! [Write a post card!]
   d. Ne les mangez pas ! [Don't eat them!]
   e. Ne leur écrivez pas de lettre ! [Don't write them a letter!]*

10. Les Français adorent _____ vin. [The French love _____ wine.]
    a. un [a]
    b. du [some]
    c. le [the]*
    d. de [some]
    e. les [the]

    a. du [some]
    b. le [the]
    c. y [there]
    d. en [some]*
    e. un [a]
12. La salade est un plat ____ les Français prennent après la viande. [The salad is a course ____ the French have after the meat.]
   a. que [that]*
   b. quel [which]
   c. lequel [which one]
   d. qui [that]
   e. dont [of which]

   a. le [the]
   b. de l’[some]
   c. en [some]*
   d. y [there]
   e. l’ [the]

14. Aux restaurants français, il faut prendre ____ café à la fin du repas. [At French restaurants it is necessary to have ______ coffee at the end of the meal.]
   a. le [the]
   b. du [some]*
   c. de [of]
   d. quelque [some]
   e. une [a]

15. L’Empire State Building appartient aux Américains. Par contre, la Tour Eiffel ne ____ appartient. Elle appartient aux Français bien sûr! [The Empire State Building belongs to the Americans. However, the Eiffel Tower doesn’t belong to ____. It belongs to the French of course!]
   a. les [them]
   b. eux [them]
   c. des [some]
   d. lui [to him]
   e. leur [to them]*

   a. Portez-le! [Wear it!]*
   b. Portez-la! [Wear it!]
   c. Portez une robe! [Wear a dress!]
   d. Ne le portez pas ! [Don’t wear it!]
   e. N’en portez pas! [Don’t wear any!]