The Effects of Deductive and Inductive Grammar Instructions in Communicative Teaching

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Abstract

A quasi-experimental study investigated the effectiveness of inductive and deductive types of instruction in the acquisition of a complex grammatical structure, the passive voice. The participants were two groups (n = 34) of second-year Japanese students from a vocational school who had three treatment lessons designed for each group embedded into the course curriculum. The quantitative and qualitative data were gathered to seek possible connections between students’ preferences and learning gains. Using a pretest and posttest design, we compared the results of recognition and production tests for inductive and deductive instruction groups. Both types of instructions were found beneficial for learners and yielded a significant effect between the production part of the pre- and post-tests, however, the inductive group significantly outperformed the deductive group on the recognition test. The qualitative data indicated students’ preferences toward deductive instruction, as it is traditional and well-known in Japan. The results of the study suggest using the inductive type of instruction with simpler grammar and deductive instruction with more complex grammatical structures. The authors advocate the importance of practicing both types of instructions. The study also shows the benefits of using CLT for teaching English in Japan.

Keywords: inductive instruction, deductive instruction, explicit-inductive instruction, grammar teaching, communicative language teaching

1. Introduction

Grammar is the foundation of our ability to express ourselves clearly. Language teachers understand how important grammar is and dedicate hours to teaching it. Modern learners, however, tend to think of grammar learning as boring, because usually it is demanding of time, concentration, and thinking, and looking for a way of teaching grammar that suits the expectations and the needs of students can be problematic. Learners can have different teaching preferences and benefit to a different degree depending on the teaching approach. In this study, we aim to provide useful hints for teachers by observing the effects of two main grammar instruction approaches on lower intermediate-level adult Japanese learners of English.

There are two main approaches to teaching grammar: the deductive and the inductive approach. When teaching deductively, the teacher presents the grammatical structure explicitly at the onset of the lesson. The instruction usually involves a detailed explanation of the rules, forms, and contexts where the newly presented grammar can be used. Harmer (2007) noted that many lessons are built using the PPP (present, practice and produce) lesson structure. The deductive approach is considered to be a traditional, teacher-centered, focus-on-form instruction. This method has been widely used in many countries and most students with different backgrounds are familiar with this type of teaching. Widodo (2006) provided a considerable list of the advantages and disadvantages of the deductive approach. He noticed that it is time-saving, easier to process, includes examples, beneficial for adult learners with developed cognitive skills, and learners know what to expect in the classroom. On the other hand, he said that the deductive approach can affect younger learners negatively (e.g., difficult structures and terminology), teacher-centeredness of the method can decrease learners’ involvement and interaction, and learners must rely significantly on their memory.

The inductive approach is the opposite. It can also be called rule-discovery learning. The teacher attempts to highlight grammatical rules implicitly by providing examples. The learners are encouraged to use critical thinking, previous language knowledge, and language-learning strategies to analyze the given examples and formulate a rule on their own. It is a learner-centered approach, where the teacher plays the role of facilitator and
guide. This approach has several strengths and weaknesses as well. Widodo (2006) highlighted that the approach promotes learning autonomy, increases motivation, develops cognitive and problem-solving skills, and language-related episodes allow for language practice. However, the approach is time-consuming and demanding of the strategic lesson and curriculum planning, and there is a chance that learners may come up with the wrong concepts of the rule or be frustrated with the approach due to different learning styles and/or previous learning experiences (Widodo, 2006).

A large body of research has been conducted investigating different aspects and effects of deductive and inductive grammar teaching to determine which approach is the most effective in EFL settings. Some of it is reviewed in the present study.

1.1 Literature Review

Previous studies on the effectiveness of inductive versus deductive instructional approaches were not unanimous in their conclusions; they produced a variety of conflicting results.

Many recent studies found that deductive instruction could promote better results in the acquisition of grammatical structures (e.g., Moranski & Zalbidea, 2022; Negahdaripour & Amirghassemi, 2016). Pourmoradi and Vahdad (2016) presented an interesting study where they investigated the effectiveness of both types of instructions on grammar learning taking gender as a variable. The results revealed that only the deductive type of instruction was beneficial for all of the participants.

Jean and Simard (2013) and Benitez-Correa et al. (2019) conducted research investigating the effects of inductive and deductive grammar instructions on the Ecuadorian learners of English. The results of both studies suggested that the inductive approach had a larger, statistically significant effect on the acquisition of the target grammar. However, the research also showed that both approaches helped students to improve their grammatical knowledge. Some of the studies were comparing guided inductive and deductive approaches (Haight, Herron, & Cole, 2007; Vogel, Herron, Cole, & York, 2011), and the analysis indicated better outcomes for the first one.

Sik (2015) and Farahani (2018) for example, found no significant differences between the two approaches and stated that they were both effective. Due to these conflicting outcomes, it is difficult to suggest the most effective approach at this point.

Thinking about why the results of all these studies were contradicting, it becomes clear that the type of instruction is not the only variable that affects grammar acquisition. Almost all of the aforementioned studies had participants of different ages, proficiency, L1s, foreign language, motivation, readiness, and previous learning experiences. The target grammar structures differed in their complexity, methods of treatment, lengths of treatment, and other mediating factors. Because of the large number of variables that affect the impact of the instructional approaches and grammar learning, it might be impossible to identify the impacts in all cases. In the present study, we aim to identify the effects of deductive and inductive instruction on the acquisition of fairly complex grammatical structure, and there are several specific mediating variables that we believe could significantly influence the results:

- the participants’ age, nationality, and their L1 proximity to the target language;
- complexity of the target grammar;
- the approach used for grammar practice;
- corrective feedback.

While the first two variables usually are embedded into the teaching context and syllabus, the other two require a decision from the teacher, based on observations of the learners.

1.1.1 Communicative Language Teaching

A variety of language teaching approaches have been developed. Celce-Murcia (2011) highlighted grammar-translation, direct, reading, audiovisual, situational, cognitive, affective-humanistic, comprehension-based, and communicative approaches as nine main approaches used at the end of the 20th and the beginning of the 21st centuries. However, contemporary trends in teaching support the Communicative Approach the most, as it is believed that language is foremost a means for communication. According to Celce-Murcia (2011), the main features of the communicative approach are:

- the goal of language teaching is the ability of the learners to communicate in the language they learn;
- semantic notions and social functions should be taught together with linguistic structures;
- activities should be designed based on social contexts and real-life situations;
activities are usually done in pairs or groups;
- the teacher is a facilitator in the classroom, not a leader.

One benefit of the Communicative Approach is that grammar lessons can be creatively integrated with speaking practice, using games or authentic materials such as videos, magazines, songs, and anything that raises students’ interest. Harmer (2007) perceived Communicative Language Teaching (CLT) as “a generalized “umbrella” term to describe learning sequences which aim to improve the students’ ability to communicate” (p. 70). Because the Grammar-Translation Approach still holds its leading position in many countries, including Japan, the speaking skills of the students are not developed well. English education in Japan is exam-oriented (Nishino & Watanabe, 2011; Underwood, 2017), the curriculum is concentrated on teaching English grammar, translation, reading, and listening, the abilities required for passing entrance exams to high schools and universities. The Grammar-Translation Approach has been criticized and the need for communicative teaching has been expressed by researchers based in Japan (i.e., Butler & Iino, 2005; Nowlan & Samuell, 2020).

There are many ways of implementing CLT. Researchers have been developing activities (Brandl, 2008; Firiady, 2018) that can be taken as an example or as a framework for integrating communication into form-oriented activities. CLT has a large spectrum of practices and can be interpreted in many ways. Because of its broad range of styles and vague definition, some researchers are skeptical of this teaching approach (e.g., Harmer, 2007). However, Ho (2004) gave an insightful explanation of the idea of the CLT. He said that the Communicative Approach means “providing the teachers with communicative activities in their repertoire of teaching skills and giving learners the opportunities in class to practice the language skills taught” (p. 26). His explanation suggests that the approach is not as different from traditional teaching methods as suggested by skeptics. CLT methods are highly adaptable and can be fitted for different educational purposes (Alamri, 2018). Due to the reasons mentioned above the Communicative Approach was chosen for grammar practice activities in the present study.

1.1.2 Corrective Feedback

The role of corrective feedback (CF) in language learning has been frequently discussed and researched. There are many controversial questions raised concerning CF, such as its efficacy, timing, form, strategy, and corrector. In an attempt to answer those questions, numerous studies have been conducted. However, most of them differ in results and suggestions, meaning that the choices concerning CF fall on the teachers. The present study is focused on the type and timing of the CF that promotes learning and is least harmful to students’ motivation.

Ellis, Loewen, and Erlam (2006) found that even though both explicit and implicit CF had positive effects on learning, explicit CF was more effective than implicit CF. There is a general agreement among the researchers that recasts and prompts are the most common forms of correction provided in ESL and EFL settings. However, some findings are suggesting that recasts might be ambiguous, difficult for learners to notice (Carpenter, 2006; Rassaei, 2014), and therefore less effective. The study by Shirani (2019) suggested that prompts are easier to notice than recasts, and, therefore, more effective, adding to the growing body of research concluding the same (e.g., Kartchava & Amar, 2014; Yang & Lyster, 2010). Doski and Cele (2018) found that prompts are not only more effective than recasts but also affect learning positively in the long term.

The timing of corrective feedback during oral practice is another variable that can influence learning. The Interaction Hypothesis (Long, 1981), which expresses the idea of the importance of noticing the gap between the incorrect production and correct form by the learner suggests that corrective feedback should be embedded in verbal interaction and provided immediately after the erroneous output. Skill Acquisition Theory developed by Lyster (2004) who advocates the use of prompts, also supports immediate feedback over delayed feedback. Although few researchers have investigated the timing of the corrective feedback. The existing studies mostly support immediate feedback (e.g., Arroyo & Yilmaz, 2018; Li, Ellis, & Zhu, 2016).

The review of the existing literature elicited important implications for the development of the methodology for the present research. We aimed to determine the most effective approach to grammar instruction for learners of English in Japan.

1.2 Research Questions

The present study asked the following research questions:

1) Do deductive and inductive grammar instructions have different effects on the acquisition of structurally and cognitively complex English passive voice structures?
2) What is the effect of both types of instructions on the acquisition of the passive voice?
3) What is the learners’ perspective on deductive and inductive grammar instruction?
2. Method

2.1 Participants

The participants were 34 second-year students (7 male and 27 female students) from a private vocational school in Japan. They were learning English as a part of their major courses. By using convenience sampling, the study was conducted with two intact classes as a part of a compulsory English course in the fall semester of 2021. Learners’ proficiency was measured by their most recent TOEIC scores. The students in both classes had scores ranging from 537 to 760 points, which is equivalent to the Independent User (B1) level on the Common European Framework of Reference for Languages (CEFR) scale.

All of the participants were native speakers of Japanese aged 19 to 21 years old. The background questionnaire revealed that 22 of the participants had been abroad, and 17 had visited English-speaking countries through exchange programs. The length of stay, however, was no longer than two weeks and happened more than three years ago. One participant had been living in Canada for a year less than three years ago and therefore, was not included in the present study. The questionnaire indicated that 32 out of 34 participants were motivated to learn English as they were going to use it for their future job (flight attendant course) or needed English to get into a university (university transfer course). Two participants indicated no interest in learning English.

The first group ($n = 14$) and the second group ($n = 20$) were assigned to inductive and deductive instruction classes respectively.

2.2 Instruments

A background questionnaire was designed to provide demographic information about the participants as well as information regarding their English learning history.

A pre-test and immediate post-tests were administered to examine the effectiveness of both types of grammar instruction. The pre- and post-tests were identical and consisted of two parts: 20 multiple-choice questions and 10 production questions (see Appendix A). The participants did not have limitations on time during the tests. The total score for each item in the multiple-choice part was measured from 0 to 1, and 0, 1, or 2 in the production part.

An ANOVA was used to compare the effectiveness of the instructional approaches. A paired samples $t$-test was used to compare the results of the pre-test and post-test for both groups. The participants were also asked to complete the questionnaire (see Appendix B) after the immediate posttest to shed more light on their opinions about the explicit or implicit treatments, and their personal learning preferences. Private interviews were conducted with three participants to provide more explanation of the questionnaire results.

2.3 Procedures and Research Design

All testing and procedures occurred during the participants’ regular class time and were integrated into daily classroom activities. The procedures for both groups were performed on the same days and lasted for two weeks.

Almost all of the participants had difficulties producing the correct forms of the passive voice during the in-class activities, which is why it was chosen as a target grammar for the research. The Japanese language has a passive voice and it is used often during formal and everyday conversations. However, there are only two tenses in Japanese, and the ending of the verb is the only part that indicates tense. Passive voice forms in English are complex and the variety of tenses makes it even more difficult for learners to process and produce them correctly. The results of the pretest indicated that the students performed better on the recognition part of the test than on the production section. Since producing passive voice sentences was challenging for the participants, the communicative approach once again was seen as a sufficient choice for designing the treatment activities.

2.3.1 Inductive instruction

In the inductive treatment condition, the teacher first presented the target structure through a reading activity, where the passive voice forms were bolded to enhance noticing (see Appendix C). After the reading was completed, the instructor started asking questions such as:

- What do these bolded forms mean?
- What voice do they express?
- What do you know about passive voice?
- When is the passive voice used?
- What is the main topic of the first sentence in the text?
- Could you try to reverse the sentence into active voice? What is the main topic now?
- Look at the bolded form in the first sentence. How is it formed? What was added? Pay attention to the participle of the main verb.
- Could you try to make passive forms of other tenses?
- Take the verbs to write and to laugh. Can you make passive voice sentences using these verbs? What can you say about to laugh? What conclusions can you make?

The participants paired up and discussed the answers to the questions with their partners. Later they shared their ideas with the class. In the present study, we adopted Vogel, Herron, Cole, and York’s (2011) view on inductive instruction, where the learners were encouraged to discover the grammar rules, however, the teacher provided leading questions so that the students could arrive only at correct conclusions. The correct answers were confirmed explicitly by the teacher, like in Seliger (1975). After the explicit confirmation of the rules, the students were asked to make their sentences using passive voice in each tense and read them to their partners. The teacher was observing the activity listened to the sentences and provided immediate corrective feedback in form of prompts when it was necessary. The students were encouraged to help each other correct their mistakes as well.

Considering the level of English of the learners, it was anticipated that most of the negotiations between the partners be performed in Japanese. The instructor used Japanese sometimes as well. More than one hour was needed to complete this stage.

The following treatments were designed to develop accuracy. CLT suggests using different interactive activities including games. Some researchers are interested in the effects of games on language acquisition. They agree that games can motivate learners, promote interaction, and improve language acquisition (e.g., Torres-Rodriguez & Martinez-Granada, 2022). The pen and paper version of the Battleship game was used for the passive voice practice. Instead of the numbers and letters that are usually written on two sides of the squares, the instructor wrote tenses and active voice sentences. In a regular version of this game, players use lines and columns to identify the square they want to hit (e.g., D5). In the adapted version, to say where the students wanted to hit, they needed to convert a sentence into passive voice (lines) using a specific tense (columns) (see Appendix C). The form must be produced correctly for the partner to identify the target square. Looking for the partner’s ships, the students had a chance to practice making passive voice forms many times. Cognitive skills are required to play the game, which is also the skill inductive teaching aims to develop. The teacher was a facilitator and used prompts for immediate corrective feedback if the students had problems producing the form correctly.

The other treatment aimed to create a real-life situation where the students were encouraged to use passive voice. They were shown a short animated film without speaking about a dog trained as a guide dog. After watching it, the learners were asked to tell each other the story using the dog as the main topic. After the discussion, each student wrote the story in six sentences using the Google Slides platform, where the teacher was able to correct the mistakes in real time. The instructor had prepared the Google slides so that each of the six lines began with “The dog…”; and the students had to add the rest using passive voice. A task where focus on form is provided within the context of meaningful practice has been empirically supported (Spada, Lightbown, & White, 2005). The posttest was administered the day after the last treatment.

2.3.2 Deductive Instruction

The instruction sequence for the deductive group started with the teacher’s explicit explanation of the meaning of the passive voice, change of forms for different tenses, followed by examples, and ended in practice. Printed handouts were used so that the learners could follow the teacher’s explanation easily. The first practice was done through the fill in the blanks exercise. The learners worked in pairs or small groups. They were encouraged to explain their choice of the form to each other. Fill-in-the-gap exercises can be found in many grammar and/or vocabulary textbooks, and many prominent researchers have used this exercise in their studies to investigate explicit knowledge (e.g., DeKeyser, 1995; Hu, 2002). Gap-filling exercises can test learners’ ability to remember and connect new structures to already existing knowledge. It activates the cognitive processes of recalling and understanding. The first treatment ended in revealing the correct answers for the exercises and their quick explanation.

The second treatment was also based on the traditional ways of teaching grammar. The learners were given ten sentences in Japanese and translated them into English working in pairs. The Grammar-Translation Method (GMT) was popular in many countries for a while and is very well known by modern learners in Japan. Some scholars have argued that GMT cannot teach language skills such as speaking and listening (Bahar, 2013) and
that the use of the first language promotes the fossilization of the interlanguage (Gass & Selinker, 1992). Even though their reasons can be understood, it is hard to argue with the fact that many people are able to use L2 effectively using translation as a learning tool (Hiraga, 2005). Mennim (2012) observed many language learning benefits from grammar-translation performed in pairs or small groups due to negotiation that happens between the students.

The dictogloss activity was chosen for the final treatment. Dictogloss has been used as an updated version of dictation and praised by researchers (e.g., Brown 2007; Prince, 2013), as a technique that encourages the development of all four language skills: listening, reading, speaking, and writing. In the dictogloss activity, learners have to reconstruct the text read by the teacher by taking notes, and sharing and discussing them with a partner. Later they write the text down paying attention to grammar. The students used the Google Slides platform so that feedback could be provided immediately. The posttest was administered on the day after the last treatment due to the time limit of the lessons.

When designing the tests and treatments for the study, the main focus stayed on the target grammar. That is why the vocabulary had to be within students’ comprehension. Insufficient vocabulary knowledge is a frequent cause of grammar test failure. High school students in Japan are supposed to acquire a vocabulary of about 3,000 word families (Kaneko, 2017). Even though the participants of the present study were second-year vocational school students and their TOEIC scores were high, the vocabulary of the materials for the study was profiled through LexTutor to make sure that it did not hinder students’ comprehension. In the end, 3,000 most frequent English word families were needed to achieve 95% comprehension of the research materials. Laufer (1989) stated that 95% is sufficient enough for understanding the reading text.

2.4 Results

The Rasch model was selected as it provides interval measures, allows for analyses of item difficulty and person ability, and examines the contrast between acquired responses and the responses expected by the model to see if the instrument validly measures participants’ knowledge of English passive voice. When inspecting person and item reliabilities, it is expected that item reliability will often be higher than person reliability, as researchers have considerable control over item difficulty and little control over person ability. Along with the item reliabilities, the person and item separation indices were investigated. Values above 2.00 are considered sufficient (Linacre, 2013). Rasch person reliability (separation) on the recognition posttest was .57 (1.15) and .48 (0.95) on the production posttest, which is considered poor on Fisher’s (2007) scale, indicating that the instrument could not separate the participants reliably according to their abilities. The item reliabilities (separation) on the recognition and production parts were .81 (2.05) and .89 (2.89) respectively, which was good (Fisher, 2007).

The next aspect of the Rasch statistics reviewed was the infit and outfit statistics. Infit statistics provide information about learners whose abilities are at or near the difficulty level of the item. The analyses showed that 13 out of 15 items fit the model with infit mean-square (MNSQ) statistics between 0.77 and 1.25, which is within the 0.70-1.30 fit criterion. Items 12 and 13 were slightly underfit showing 1.40 and 1.40, respectively (see Table 1). The difficulty of the verb tenses and the question form used in those two items could be the reason for the poor fit (see Appendix A).
Table 1. Rasch Statistics for the Recognition Posttest

<table>
<thead>
<tr>
<th>Item</th>
<th>Measure</th>
<th>SE</th>
<th>Infit MNSQ</th>
<th>Infit ZSTD</th>
<th>Outfit MNSQ</th>
<th>Outfit ZSTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1.79</td>
<td>0.42</td>
<td>1.40</td>
<td>1.80</td>
<td>1.45</td>
<td>1.40</td>
</tr>
<tr>
<td>15</td>
<td>1.62</td>
<td>0.41</td>
<td>0.77</td>
<td>-1.30</td>
<td>0.74</td>
<td>-1.00</td>
</tr>
<tr>
<td>13</td>
<td>1.62</td>
<td>0.39</td>
<td>1.41</td>
<td>2.00</td>
<td>1.42</td>
<td>1.50</td>
</tr>
<tr>
<td>10</td>
<td>0.66</td>
<td>0.39</td>
<td>1.04</td>
<td>0.40</td>
<td>0.99</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>0.37</td>
<td>0.39</td>
<td>0.82</td>
<td>-1.30</td>
<td>0.77</td>
<td>-0.80</td>
</tr>
<tr>
<td>1</td>
<td>0.37</td>
<td>0.40</td>
<td>0.98</td>
<td>-0.10</td>
<td>0.86</td>
<td>-0.40</td>
</tr>
<tr>
<td>14</td>
<td>0.21</td>
<td>0.41</td>
<td>1.25</td>
<td>1.60</td>
<td>1.18</td>
<td>0.70</td>
</tr>
<tr>
<td>11</td>
<td>-0.11</td>
<td>0.41</td>
<td>1.21</td>
<td>1.20</td>
<td>1.12</td>
<td>0.40</td>
</tr>
<tr>
<td>4</td>
<td>-0.11</td>
<td>0.44</td>
<td>1.14</td>
<td>0.80</td>
<td>0.98</td>
<td>0.10</td>
</tr>
<tr>
<td>2</td>
<td>-0.47</td>
<td>0.44</td>
<td>0.96</td>
<td>-0.10</td>
<td>0.88</td>
<td>-1.10</td>
</tr>
<tr>
<td>9</td>
<td>-0.67</td>
<td>0.46</td>
<td>0.70</td>
<td>-1.30</td>
<td>0.49</td>
<td>-1.10</td>
</tr>
<tr>
<td>6</td>
<td>-0.89</td>
<td>0.40</td>
<td>0.80</td>
<td>-0.70</td>
<td>0.56</td>
<td>-0.70</td>
</tr>
<tr>
<td>7</td>
<td>1.14</td>
<td>0.52</td>
<td>0.86</td>
<td>-0.30</td>
<td>0.61</td>
<td>-0.50</td>
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<tr>
<td>5</td>
<td>-1.43</td>
<td>0.56</td>
<td>0.79</td>
<td>-0.50</td>
<td>0.50</td>
<td>-0.50</td>
</tr>
<tr>
<td>8</td>
<td>-1.79</td>
<td>0.63</td>
<td>0.77</td>
<td>-0.40</td>
<td>0.40</td>
<td>-0.50</td>
</tr>
</tbody>
</table>

Almost all of the items for the production test showed very good fit (Fisher, 2007) ranging from 0.70 to 1.35 for infit MNSQ, except for item 7, which underfit at 1.55 (Table 2). Item 7 required the knowledge of the past perfect tense, which is difficult for many EFL learners (see Appendix A).

Table 2. Rasch Statistics for the Production Posttest

<table>
<thead>
<tr>
<th>Item</th>
<th>Measure</th>
<th>SE</th>
<th>Infit MNSQ</th>
<th>Infit ZSTD</th>
<th>Outfit MNSQ</th>
<th>Outfit ZSTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1.87</td>
<td>0.44</td>
<td>1.00</td>
<td>0.20</td>
<td>0.31</td>
<td>-0.20</td>
</tr>
<tr>
<td>7</td>
<td>0.78</td>
<td>0.27</td>
<td>1.55</td>
<td>1.70</td>
<td>1.49</td>
<td>1.20</td>
</tr>
<tr>
<td>6</td>
<td>0.41</td>
<td>0.23</td>
<td>1.11</td>
<td>0.60</td>
<td>1.20</td>
<td>0.80</td>
</tr>
<tr>
<td>5</td>
<td>0.24</td>
<td>0.22</td>
<td>0.95</td>
<td>-0.20</td>
<td>0.92</td>
<td>-0.20</td>
</tr>
<tr>
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<td>1.35</td>
<td>2.00</td>
<td>1.36</td>
<td>1.40</td>
</tr>
<tr>
<td>2</td>
<td>-0.17</td>
<td>0.21</td>
<td>0.73</td>
<td>-1.90</td>
<td>0.64</td>
<td>-1.40</td>
</tr>
<tr>
<td>8</td>
<td>-0.41</td>
<td>0.20</td>
<td>0.70</td>
<td>-2.10</td>
<td>0.58</td>
<td>-1.00</td>
</tr>
<tr>
<td>4</td>
<td>-0.45</td>
<td>0.22</td>
<td>0.82</td>
<td>-1.10</td>
<td>0.72</td>
<td>-0.90</td>
</tr>
<tr>
<td>3</td>
<td>-1.09</td>
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<td>1.17</td>
<td>0.70</td>
<td>1.21</td>
<td>0.50</td>
</tr>
<tr>
<td>1</td>
<td>-1.11</td>
<td>0.28</td>
<td>1.07</td>
<td>0.30</td>
<td>0.92</td>
<td>0.30</td>
</tr>
</tbody>
</table>

In addition to the fit statistics, the Wright map shed light on the person and item relations (see Figures 1 and 2). To produce reliable data, there should be items that every person can answer correctly and items that are above the level of the person with the highest ability. In this way, floor and ceiling effects are avoided. As shown in Figures 1 and 2, the items generally covered the ability levels of the participants.
<table>
<thead>
<tr>
<th>More able participants</th>
<th>More difficult items</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
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Figure 1. Wright Map for the Recognition Posttest

Less able participants | Easier items

More able participants | More difficult items
Figure 2. Wright Map for the Production Posttest

A Rasch Principal Components Analysis (PCA) of item residuals was run to investigate dimensionality. With 12.4% (eigenvalue 2.6) of unexplained variance on the recognition and 14.4% (eigenvalue 2.3) on the production parts of the posttest, the instruments were fundamentally unidimensional (Fisher, 2007).

2.4.1 Research Question 1

Research question 1 asked which instructional approach was more effective for teaching English passive voice. A one-way ANOVA was conducted to compare the posttest results for both groups. There was a statistically significant difference, $F(1,32) = 5.80, p = .02$, partial $\eta^2 = .15$, for the recognition posttest for the inductive group. The results for the production posttest yielded no significant difference between the deductive and inductive treatments $F(1,32) = 1.89, p = .17$, partial $\eta^2 = .056$.

2.4.2 Research Question 2

A paired-samples $t$-test was conducted to evaluate whether both groups improved from the grammar instruction and treatments. The results indicated that both treatments had a significant effect on the acquisition of passive voice productively. The induction group improved significantly, $M = 1.08, SD = .83, t(13) = 4.86, p < .01$, and the deductive group did likewise, $M = .90, SD = .88, t(19) = 4.55, p < .01$. The difference between the pre- and posttests on the recognition test was also statistically significant for both the inductive treatment, $M = .61, SD = .61, t(13) = 2.40, p > .05$, and deductive treatment, $M = .61, SD = .99, t(19) = 1.03, p > .05$.

2.4.3 Research Question 3

To evaluate the students’ preferences for the two instructional approaches, the results from the post-study questionnaire were assessed. All 34 participants reported that they preferred deductive instruction for learning grammar (strong preference), and four reported that they did not mind (moderate preference) the rule discovery process required for inductive teaching. It must be noted, though, that these four participants were assigned to the deductive group and were never taught inductively. All 34 participants reported that they enjoyed (strong to moderate preference) the post-instruction activities (treatments) and would like to repeat them in the future.
The results of the qualitative analysis conducted to further understand students’ preferences for these teaching approaches showed that the explicit explanation of the rules at the beginning is something that students are used to and perceive as “normal.” Some participants agreed that inductive teaching makes them think more and, therefore, is beneficial. However, many participants mentioned that they felt embarrassed when they had no answer or no ideas about the questions asked by the teacher. They also reported that the thinking process was exhausting.

3. Discussion

The results of the first research question where the inductive group outperformed the deductive group productively are surprising when looking at them through the explicit-implicit dichotomy, considering that deductive instruction is more familiar and preferable to Japanese students. However, there were a few important factors that could explain the outcome.

First, when presenting the passive voice forms of different tenses to the deductive group, a few students could not remember and wanted to clarify the use of the present and past perfect tenses. Because there are only two grammatical tenses in the Japanese language, the confusion about English tenses is not rare. Moreover, English learners in many countries whose L1 has no such grammar (e.g., Slavic languages) struggle with its acquisition. In a natural setting, the clarification or the review of the previously learned material happens often when talking about more complex structures. The quasi-experimental setting of the present study allowed the instructor to answer the students’ questions and provide explanations about the present and past perfect tenses in addition to complex passive voice grammar. It can be hypothesized that the deductive group got an information overload which affected the acquisition of passive voice grammar negatively (VanPatten, 2004), and, therefore, caused lower results on the post-test.

Second, the passive voice grammar was not new to both groups. It was previously taught in junior high or high schools in the students’ L1. The degree to which the grammatical structure was acquired at the time of learning it at school could not be known, and therefore, it could be the case that inductive teaching helped the students retrieve the information better from their memory due to the leading questions asked by the teacher (Williams, 1999), as it involved complex cognitive processes.

Third, and probably the most important reason, is the way inductive teaching was performed. After the students had discussed the questions asked by the teacher and had arrived at their conclusions, the instructor would give an explicit answer to the questions. In this way, the inductive group became explicit-inductive. An inductive discovery together with the explicit rule provision can benefit students’ language learning. DeKeyser (2003) suggested that interchanging teaching instructions should be viewed as a way that helps students with different learning styles. He assumed that the two types of instruction are not opposites, but rather two parts of the whole, and therefore, much beneficial when used together.

The results of the second research question, where the results between the pre- and posttests suggest that both types of instructions were highly effective, were not surprising. All of the participants benefited greatly from both deductive and inductive teaching. The research was not restricted to using only the instructions, but also the activities meant as treatments. Considering that both groups were engaged in different types of instruction and participated in different activities, the only two things they had in common were the communicative approach used for grammar practice and provision of the immediate corrective feedback mostly in form of prompts. Because both groups improved significantly on the production part of the posttest, it can be hypothesized that these two variables contributed to grammar acquisition. The CLT was chosen for grammar practice because the participants showed low ability for passive voice output. The statistical significance implies that CLT is effective in improving grammar knowledge. The finding is in line with other studies that emphasize the importance of combining focus-on-form instruction and communicative activities (Chung, 2017; Ho, 2014; Long, 2000; Nassaji, 2000). They also support the recommendation of teachers based in Japan to adopt CLT as the main teaching approach (e.g., Humphries & Burns, 2015; Underwood, 2017). Swain (1985) has suggested that output is important for language acquisition. During group work or tasks that require negotiation, learners have to make their output clear and comprehensible for the other party to be understood. Pica (1987) coined this term as pushed output. Grammar lessons can be an ideal setting for improving the comprehensibility of learners’ output or vice versa, and communicative context is necessary for form-focused instruction to last (Ellis, 2014; Lightbown, 1992). Moreover, the interviews with a few of the participants revealed that they felt like they were using the language for their needs and “had fun in English”. All 34 participants noted that they had enjoyed the activities and would like to repeat them in the future in the follow-up questionnaire, suggesting that the CLT also improved the students’ motivation.
Overall, the results of the quantitative part of the research are similar to a number of studies (e.g., Cerezo, Caras, & Leow, 2016; Tammenga-Helmantel, Arends, & Canrinus, 2014; Vogel & Engelhard, 2011) where inductive approach yielded higher outcomes, however, where it was also noted that the students benefited from both types of instructions. Since inductive and deductive groups showed significant effects from pre-test to post-test, it is suggested that they could be used together or alternated successfully.

The third research question reveals the perception of Japanese learners toward the two types of instruction. It was expected that the learners prefer the deductive type because it remains common in Japan (Underwood, 2017). The results are in line with other studies set in the countries where the traditional way of teaching grammar is widely used (e.g., Mallia, 2014).

3.1 Teaching Implications

The analyses of the data obtained from the test results and the questionnaire imply that both types of instructions were effective in teaching grammar. However, instructors should keep in mind that the present study took an explicit-inductive way of teaching as inductive instruction. It seems that the combination of cognitive processes during meta-talk and explicit confirmation of grammatical rules improves the grammatical accuracy of students (Duibhir, Dhiorbhain, & Cosgrove, 2016; Glassser, 2013). However, extensive meta-talk about difficult grammar can affect learners’ attitudes negatively. Because the students expressed their disliking of inductive teaching, it could be hypothesized that the grammar was too difficult for this type of instruction. The passive voice is a complex structure and is not used much in daily speech. Inductive teaching demanded much time and effort from both the students and the teacher. Noticing the gaps in their knowledge while trying to answer the teacher’s questions could have created negative feelings toward rule-discovery. Fotos (2002) noted that inductive teaching can be successful if there is a lot of communication between the students, once again emphasizing the importance of students being used to talk about grammar in class, and having language-related episodes, which is not so common in Japan (Underwood, 2017). Taking this into account, simpler grammar (e.g., prepositions, word order) could be a better choice for inductive teaching (Russel, 2014). Also, in this way Japanese learners have more chances to experience success and get used to the inductive type of instruction. More complex and less frequent or salient grammar could benefit from explicit teaching not only in terms of language accuracy but also in learners’ perceptions, as shown in the present study.

3.2 Limitations and Future Research

Because the results of previously conducted studies varied greatly, the limitations of the present study should be reviewed to further clarify the outcomes and highlight the need for future research. First and foremost, a larger sample size could have increased the power of the data analysis, and the variety of the L1 of the participants could have improved the generalizability of the findings.

Second, because all of the participants were native Japanese speakers and their level (lower-intermediate) supposedly allowed them to comprehend most of the teacher’s instructions, it could be hypothesized that explanations provided in Japanese could have improved learners’ understanding of the grammatical structure and showed better results on the posttests. Even though the instructor in the present study was able to provide some parts of the material in Japanese, it might not have been enough for a complete understanding of the grammatical terminology. It highlights the need for conducting studies with different levels of learners where the instruction is provided in the participants’ L1.

Third, the present study did not investigate the effects of deductive and inductive instructions on long-term learning, since there was no delayed posttest was conducted. Even though both types of instruction contributed to the students’ knowledge within a short period, the teacher wants to make sure it stays in memory for a long time, and further research is needed.

Also, the present study reviewed the communicative approach and immediate explicit feedback as variables that influence grammar learning. However, more research should be conducted to investigate other variables, such as other grammar practice approaches or different ages and/or levels of the participants.

Lastly, most of the previous research used a quasi-experimental design, including the present research. This study, although added to the existing pool of studies with similar outcomes, does not give a conclusive answer to which instruction is the most effective. Future research should be done in a laboratory setting that allows for stricter control of the procedures and participants. Exploring these topics could enhance understanding with regard to the effectiveness of grammar instructions.
4. Conclusion

In the present study, we investigated whether there is a significant difference in the mastery of the passive voice between the group taught using a deductive approach and the group taught using an inductive approach. Both groups benefited significantly from the treatments yielding high results on the production test; however, the inductive group significantly outperformed the deductive group on the recognition test.

The results obtained from the questionnaire indicated that students prefer deductive teaching, something they are used to. Inductive instruction was perceived as overwhelming and time-consuming. The communicative approach to grammar practice had a positive effect on grammar acquisition.

The contradiction between the quantitative and qualitative data elicits the difficulty that instructors face every day. They have decided which approach to choose, whether to sacrifice students’ preferences to promote language accuracy or vice versa. The scholars are tireless in their attempts to find a panacea, the only most effective way of teaching the language that all learners can benefit from. However, it seems to be an unachievable goal because there are so many factors affecting language acquisition. Some of these factors cannot be predicted or controlled, such as rapport between the students and the teachers or the learners’ moods. One of the greatest skills that in-class instructors should develop is the ability to make the right choice in various cases. It does not necessarily mean choosing between the particular types of instruction or approaches all the time, but knowing when to combine them.

References


Ho, P. V. P. (2014). The effects of communicative grammar teaching on students’ achievement of grammatical knowledge and oral production. *English Language Teaching, 7*(6), 74-86. https://doi.org/10.5539/elt.v7n6p74


Appendix A
Pre- and post-test
Select a Passive Voice sentence that expresses best the sentence given in Active Voice.

1. Her manners pleased us very much.
   a. We were very much pleased on her manners.
   b. We are very much pleased with her manners.
   c. We pleased her very much with manners.
   d. We were very much pleased with her manners.

2. The driver was blowing the horn.
   a. The horn was blown by the driver.
   b. The horn was being blown by the driver.
   c. The horn has been blown by the driver.
   d. The horn is being blown by the driver.

3. The thief was caught by the police.
   a. The police had been trying to catch the thief
   b. Police has caught the thief
   c. The thief has been caught by police
   d. The police caught the thief

4. The hunter shot the tiger
   a. The tiger was killed by the hunter
   b. Hunter was trying to shoot the tiger
   c. The tiger was shot by the hunter
   d. Hunter shot at the tiger

5. They drew a circle in the morning
   a. A circle was being drawn by them in the morning
   b. A circle was drawn by them in the morning
   c. In the morning a circle have been drawn by them
   d. A circle has been drawing since morning

6. They will demolish the entire block
   a. The entire block is being demolished
   b. The block may be demolished entirely
   c. The entire block will have to be demolished by them
   d. The entire block will be demolished by them

7. We have warned you
   a. You have been warned by us
   b. We have you warned
c. Warned you have been

d. Have you been warned

8. The shopkeeper lowered the prices
   a. The prices lowered the shopkeeper
   b. The prices were lowered by the shopkeeper
   c. Down went the prices
   d. The shopkeeper got down the prices

9. They have published all the details of the invention
   a. All the details of the invention have been published by them
   b. The publication of the details of invention was done by them
   c. All the details have been invented by the publishers
   d. All the inventions have been detailed by them

10. He teaches us grammar
   a. Grammar was taught to us by him
   b. We are taught grammar by him
   c. Grammar will be taught to us by him
   d. We were taught grammar by him

11. Bipin was not told about the meeting.
   a. Somebody did not tell Bipin about the meeting.
   b. There was nobody who could tell Bipin about the meeting.
   c. Nobody told Bipin about the meeting.
   d. The meeting was not told about to Bipin.

12. Will he have written a letter?
   a. Will a letter have written by him?
   b. Will a letter be written by him?
   c. Will a letter to be written by him?
   d. Will a letter have been written by him?

13. Has anybody answered your question?
   a. Your question has been answered?
   b. Anybody has answered your question?
   c. Has your question been answered?
   d. Have you answered your question?

14. I don’t like people telling me what to do.
   a. I don’t like it when people are telling me what to do.
   b. I don’t like being told what to do.
c. Telling me what to do is what I don’t like.
d. I don’t like people when they tell me what to do.

15. They proposed to hold a meeting.
   a. A meeting had to be proposed to be held by them.
   b. It was proposed by them to hold a meeting.
   c. A meeting should be proposed to be held.
   d. It was proposed to hold a meeting.

(https://interviewmania.com)

Using the phrases make sentences in passive voice.

1. (cities/block/cars)
   In the future….

2. (thousands of planes/produce)
   Each year….

3. (penicillin/discover/Fleming)

4. (education/should not pay/parents)
   …in 1982

5. (tanks/use/armies)
   Since World War I….

6. (a car park/build/the local council)
   …just now.

7. (two banks/rob)
   Before the robbers were arrested….

8. (this shop/close)
   …on Sundays.

9. (the islands/inhabit/the Irish)
   …until 1953.

10. (the roof/repair/carpenters)
    …when it caught fire.

(https://www.e-grammar.org/passive-voice/test2-exercise2/)
### Appendix B
#### Questionnaire

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<tr>
<th>#</th>
<th>Question</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
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<tbody>
<tr>
<td>1.</td>
<td>The teacher explained the material clearly</td>
<td>5</td>
<td>4</td>
<td>3</td>
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<td>2.</td>
<td>The teacher’s spoken English was understandable</td>
<td>5</td>
<td>4</td>
<td>3</td>
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<tr>
<td>3.</td>
<td>The explanation helped me to understand how to use Passive Voice</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>4.</td>
<td>I prefer the grammatical rule to be explained by the teacher</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>I prefer to discover the grammatical rule by myself</td>
<td>5</td>
<td>4</td>
<td>3</td>
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<td>1</td>
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<td>6.</td>
<td>The activities were interesting</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>7.</td>
<td>The lesson was interactive</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>8.</td>
<td>The teacher provided enough guidance</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>9.</td>
<td>I feel more confident about using Passive Voice</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>10.</td>
<td>I want to do more activities like these in the future</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
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### Appendix C
#### Activities. Inductive teaching.

**An example for inductive questioning.**

The History of football.

No one can really say when the game of football actually began. Some people believe football was played more than 3000 years ago in Japan and in Rome. In England, in the 14th century, it wasn't allowed to play football. It was believed to cause wild behavior. At this time, football players were put in jail. However, it didn’t stop people from playing the game. It became very popular in England and the rest of the world.

**Battleship game**

**Up:**
- Present simple
- Past simple
- Present cont
- Present Perfect
- Modal
- Future
- Past cont
- Past Perfect

**Down:**
- I like green bananas
- Lily keeps her shoes in the fridge.
- Dana helps people at the hospital.
- They clean the classroom every Monday.
- Tornadoes destroy many buildings.
- He moves the furniture
- Mike writes a book about cats.
- Babies drink milk.
- He eats bananas every morning.

**Appendix D**

**Activities. Deductive group**

Fill in the blanks

1. I………………..(see) an old movie on TV last night.
2. The movie……………(film) in black and white.
3. It ……………….(show) again on TV tonight.
5. My favorite director is Steven Spielberg who………………..(make) many movies.
6. “Jurassic Park” by Spielberg………………..(know) all over the world.
7. It………………..(tell) a story about a theme park full of dinosaurs.
8. The dinosaurs………………..(kill) thousands of years ago.
9. It………………..(believe) that the meteorite was the reason.
10. I………………..(fascinate) by the dinosaurs.
Grammar Translation. Work in pairs. The teacher will check.
1. 泥棒に財布を盗まれました。
2. 友達に殴られました。
3. 彼氏に誕生日を忘れられました。
4. 親に好きな靴を捨てられました。
5. 明日学校で誕生日パーティーが開かれます。
6. 大学の隣に、新しいスーパーが建てられます。
7. 私は誰かにパソコンを盗まれました。
8. 毎日先生に褒められている。
9. 先週秘密の話を親に聞かれました。
10. この絵はピカソによって描かれました。

Dictogloss.

The Tornado
Last month, Linda’s house was destroyed by a tornado. The roof was ripped off by the wind. Most of Linda’s possessions were lost in the storm. Unfortunately, her house wasn’t insured. Linda is living at her mom’s apartment while her house is being repaired. Linda needs a lot of money to buy new furniture and clothes. Her mom and friends will give her some money. They love Linda very much.

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