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The Effects of Guided Discovery Learning on the Development of Iranian Teenage and Adult EFL Learners' Syntactic Structures

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Abstract: Researchers have always been concerned with innovative approaches to facilitate the learning process for language learners. One of the facilitating strategies is guided discovery learning, which can help learners to develop their critical and analytical thinking skills. Hence, the present study is an attempt to discover the effects of guided discovery learning on the development of teenage and adult learners' syntactic structures. The participants of this study were 34 male EFL Iranian learners in Iranmehr Language Institute, Aleshtar, Lorestan province, Iran. The participants were divided into two experimental groups based on their age (12 to 18 as teenagers, and 18 to 30 as adults). First, the Longman proficiency test was given to the participants to measure their language ability. After that, a pre-test was given to the students regarding syntactic structures before the treatment. Then, every two weeks a post-test was given to the students to assess their gradual development. One immediate and two delayed post-tests were given to the students. In this study, paired and independent samples t-tests were used to compare the development of syntactic structures in the studied groups. The results of this study showed that both groups (teenagers and adults) made an improvement but adults improved more significantly than teenagers. The findings of the study contributed to the practical employment of guided discovery learning as an effective teaching methodology, especially for adults in the process of language learning.

Keywords: Guided Discovery Learning, Syntactic Structures, Teenage, Adult.

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Introduction

Everyone who speaks a language is aware of its syntax. While describing a language, linguists make those grammar rules that are already in the minds of the speakers explicit. Although speakers might be different, there exists some shared knowledge as well. That is the part of grammar that facilitates communicating in that specific language. If the linguists use a true model of description of the speakers' linguistic ability, the results of the grammar description and the language would be successful. That is, a descriptive grammar model states how the speakers speak, not how they should speak. Fromkin, Rodman, and Hyams (2018) pinpointed that descriptive grammar is an explanation of how a speaker speaks and comprehends a language and distinguishes whether it is grammatical or not.

Grammar is the most basic and important part of a language (Nassaji & Fotos, 2011), but it has at the same time been the most controversial issue in the field of language learning and teaching. Accordingly, whether grammar should be taught implicitly without formal and explicit exposure or explicitly through natural exposure has always been a matter of controversy in the language teaching field.

Grammatical knowledge can help learners make correct sentences; it also helps them to use different structures to express their intentions, thoughts, and feelings. If structures are not used properly, then it is not possible to convey real meaning, and the sentences are nothing but a bunch of words that are put together. To be able to transfer our intentions, it is necessary to have some grammatical knowledge; otherwise, it is not possible to transfer them (Ellis, 2001, 2006). Nassaji and Tian (2010) stated that to teach grammar, the focus has to be on the communicative aspect of linguistic instruction to provide assistance for learners to interactively learn the target linguistic forms. Hence, the communicative dimension of grammar instruction matters in a second or foreign language context.

One of the taken-for-granted approaches to teach grammar within a communicative context is guided discovery learning. Guided discovery learning is a learner-centered approach that engages the learner in the process of learning and acquiring the rules and patterns. In this method of teaching, students are not directly presented with a target grammatical structure or rule. Instead, they are given sufficient content in which the target structure is used. Students then discover the grammatical rules or figure out the patterns on themselves. The teacher's role is to guide students to their own discovery, not to give students the information on the grammatical

rule (Verner, 2018). Therefore, it is necessary to explore its possible effect on the learners' development of syntactic structures, particularly with respect to teenage and adult learners, and more specifically in an EFL context.

Review of the Literature

Nunan (2015) argued that there are two aspects to the definition of grammar. While the first one is concerned with how words are formed the second one is concerned with how words are combined to form sentences. Morphology is the academic study of word formation while ordering and combining words is called syntax. On a different note, grammar is defined in two different ways. Sometimes, it is considered as all aspects of the language. However, in language teaching contexts, the term is often used instead of syntax (Nunan, 2015). In this study, grammar is used in the latter sense, and the knowledge of ordering and combining words into sentences which is called syntax is intended by grammar.

There exist two main approaches to teaching grammar, namely deductive and inductive. Following these two approaches, English language teachers have employed several different techniques and procedures for teaching grammar. A deductive approach involves the learners being given a general rule, which is then applied to specific language examples and honed through practice exercises. An inductive approach involves the learners detecting, or noticing, patterns and working out a rule for themselves before they practice the language (Hird, 2015). In between these two approaches lies guided discovery which combines the best from each. Guided discovery is a modified inductive approach in which there is ample exposure to the language first, followed by using inferencing techniques, followed by an explicit focus on rules and practice. There are cognitive, linguistic, and social benefits to this approach (Saumell, 2012).

Shadiq (2009) defines guided discovery learning as a learning approach "where students are given a situation or problem, which then performs data collection, making guesses (conjectures), trial and error, searching and finding order (patterns), generalizing or composing formulas and general forms, proves the correctness of the allegations" (p. 12). It is through guided discovery learning that learners can experience self-regulation through fostering their creativity and analytical thinking (Shieh & Yu, 2016). It also enables the learners' self-construction of knowledge by taking an active part in classroom cooperation created through teachers' submission of guiding questions, leading to learners' independent learning as well (Yerizon et al., 2018). Learners' discovery learning can be enhanced when

they are guided by teachers to promote their hypothesis-making and interpretation in a problem-solving learning environment.

In order to mention theoretical support for guided discovery learning, social constructivism can be taken into account. Learning is seen as something that emerges from the learners' internal creation of meaning, rather than as a passive process and the result of the internalization of outside information (i.e., as a process of transmission) (Williams & Burden, 1997). Guided discovery learning is a constructivist technique in which examples are given to students and questions are asked to explore the concepts or rules on their own, and it is said that students can understand more profoundly by doing this. According to Schunk (2012), as its name suggests, discovery learning helps students to explore concepts and essential relationships by assisting and involving them in classroom activities such as posing questions, constructing theories, undertaking research, and examining a hypothesis.

Regarding the efficacy of guided discovery learning, there have been several studies conducted. However, some of these studies have either addressed discovery learning in learning other languages such as French (Haight, Herron, & Cole, 2007) or have focused on other fields such as mathematics, chemistry (Permatasari & Laksono, 2019), science learning (Pratiwi, Rusilowati, & Nugroho, 2021), and problem-solving skills (Simamora, Saragih, & Hasratuddin, 2019). In the elementary foreign language college classroom, Haight et al. (2007) explored the impact of deductive and guided inductive instructional methods on grammar learning in college French classrooms. Eight grammatical constructs were taught to forty-seven second-semester French students: four with a deductive instructional approach and four with a guided inductive instructional approach. The long- and short-term improvements in grammatical knowledge for each condition were assessed using a quasi-experimental within-subjects design that included pre-test and posttest as well as eight immediate post-treatment quizzes. The findings of the study revealed a substantial difference between the average immediate test scores of the participants favoring the guided inductive method. The findings from this analysis also revealed a strong trend in favor of the directed induction of grammatical constructs for long-term learning.

Guided discovery learning has also been attended by several researchers; however, the majority of research has been concerned with science learning including Math or Chemistry. For example, Permatasari and Laksono (2019) aimed to explore the effect of implementing guided discovery learning on the learners' integrated learning and self-regulation. Two questionnaires were administered among 65 learners from the Special Region of Yogyakarta,

Indonesia. They were divided into one experimental and one control group. Guided discovery learning was the target intervention for the experimental group, while the expository learning approach was conducted for the control group. Learners in the experimental group underwent guided discovery learning through which their critical thinking potential and the ability for inference were promoted. The learners were provided with process instruction in which they could improve their ability to discuss, observe the problem, formulate a hypothesis, and think critically. The results of the pre-test and post-test of administering the questions indicated a significant difference between the experimental and control group learners concerning their integrated and self-regulated abilities. The findings also revealed that guided discovery learning "made students became involved in the investigation, like formulating problems, formulating a hypothesis, collecting data, drawing a conclusion, therefore, on buffer solution topic, guided discovery learning was able to improve students' self-regulated" (p. 9).

To recognize the efficiency of guided discovery learning, Simamora et al. (2019) investigated whether it could be effective on the learners' problem-solving ability and self-efficacy. Although the focus was on Mathematics students, the researchers aimed at recognizing the role of guided discovery learning in paving the way for learners to develop their analytical thinking capacity. Following a quasi-experimental pre-test-post-test design, the researchers provided guided learning discovery for the experimental group, while the conventional approach was implemented for the learners in the control group. The results of the pre-test and post-test showed the experimental group's significant outperformance compared to the control group regarding their Mathematical problem-solving skills and self-efficacy. The findings demonstrated that "the integration of local culture in mathematics learning is an important matter to be considered in an effort to maximize students' mathematics learning achievements" (p. 69). Guided discovery learning was found to be a practical approach for Mathematics teachers to improve the learners' reasoning and hypothesis-testing in the classroom, which helps them to enjoy autonomy in the learning process. Similarly, in a most recent study, Pratiwi et al. (2021) examined the effects of using guided discovery learning as a productive teaching approach to improve science learning for fourth-grade elementary school learners. The researchers found that learners' exposure to guided discovery learning could be significantly effective in their science learning. In addition, the learners would be able to develop their process learning in solving the problems and carrying out the tasks more autonomously, in the way that their self-regulation could be developed. Teachers, as argued by the researchers, are strongly recommended to raise their

awareness of how to implement guided discovery learning and benefit from it as an effective strategy in promoting learners' reasoning in challenging tasks. This study aimed to see if the results obtained in other fields and areas hold true for language learning too.

Another group of studies in this regard investigated the effects of guided discovery learning on other skills such as reading (El-Kahlout, 2010) or learning in general (Alfieri, Brooks, Aldrich, & Tenenbaum, 2011). For eleventh graders in the Gaza Governorates, El-Kahlout (2010) explored the efficacy of using guided discovery learning to improve reading comprehension skills. The researcher followed an experimental research design in order to accomplish the purpose of the research. The research sample consisted of 77 students who were selected intentionally from the humanities students. The experimental group consisted of 39 students who were taught 11 units (7-8-9-10) by the directed discovery of reading comprehension from the English textbook for Palestine, while the control group comprised 38 students who were taught reading comprehension by ordinary teaching methods. During the second term of the school year, the experiment was performed in two months. The study results showed that there were statistically important variations in reading comprehension abilities in favor of the post-test between the experimental group's pre- and post-test. The results of the study suggested that English teachers should apply guided discovery learning to teaching English in general and reading teaching in particular. It was also proposed that the Ministry of Education should conduct training sessions to teach teachers how to use guided exploration and prepare enrichment resources to involve students in their learning. Eventually, the study proposed that further research should be performed to investigate the efficacy of guided discovery learning on different language skills, as well as at various levels and grades.

Alfieri et al. (2011) explored the effects of guided-based instruction on enhancing learning. Therefore, a study of 164 studies was used to perform 2 meta-analyses: the first examined the effects of unassisted discovery learning versus explicit instruction, and the second examined the effects of improved and/or assisted discovery versus other forms of instruction (e.g., explicit, unassisted discovery). Random effects tests of 580 comparisons showed that as compared to unassisted exploration under most circumstances, the findings were favorable for explicit instruction. In contrast, studies of 360 comparisons showed that when compared to other modes of instruction, the findings were favorable for enhanced exploration. The results indicated that learners do not benefit from unassisted exploration, while feedback, worked examples, scaffolding, and elicited explanations do.

The most related studies in this area have focused on inductive and deductive approaches in teaching grammar. However, they have limited discovery learning to inductive learning (Behjat, 2008), have researched the effects on other levels such as elementary (Zare Behtash & Bamadi, 2014), have focused on personality types (Vahdat, Hayati, & Pourmoradi (2017), or have zoomed on a limited grammatical structure (Esmailizadeh & Tabatabaee Lotfi, 2019). A comparative study examined the efficacy of deductive versus inductive grammar instruction on the grammatical performance of Iranian EFL learners in the Islamic Azad University, Abadeh Branch (Behjat, 2008). There were 150 English major freshmen in the sample, 110 of the participants were females and 40 of them were males, and they were given a pretest, treatment, and a posttest. The researcher also had a focus on the gender factor. Finally, the researcher pointed out that when they were taught inductively, males learned grammar better, while females displayed better results when they were taught deductively.

Zare Behtash and Bamadi (2014) explored the impact of inductive versus deductive approaches to teaching grammar on Iranian elementary EFL learners' grammar achievement in Chabahar city, Iran. A total of 65 female students at a public high school in Chabahar, Sistan and Baluchistan province, Iran, participated in their study. Students with similar achievements were partitioned into three control and experimental classes. The two classes were exposed to two distinct instructional approaches and then tested using similar evaluation criteria. The results of the analysis showed that the group subjected to the inductive method in contrast had a higher level of achievement and also a better satisfaction level. There was a significant difference that showed that the inductive approach could have a more beneficial impact on students' learning than the conventional deductive approach. Vahdat et al. (2017) conducted research on the influence of inductive-deductive teaching on the grammar learning of field-dependent and field-independent EFL Iranian language learners at Shahid Chaman University of Ahvaz. The participants in his study were 82 freshmen, both male and female EFL students. Their age ranged between 19 to 22. The results of the paired sample T-test indicated that inductive learning was more successful for female participants with field-dependent cognitive style, while deductive learning was more effective for both male and female participants with the same cognitive types. The results indicated that when the participants were female with field-independent cognitive types, the inductive method was productive for learning grammar.

Esmailizadeh and Tabatabaee Lotfi (2019) conducted the same kind of study to examine the significant differences among the effects of three inductive techniques of guided-

discovery learning, self-discovery learning, and situational-presentation technique on learning Type I conditional sentences by Iranian EFL learners of vision 2. To achieve the main purpose, this study employed a pretest and post-test design with a sample of 90 students at the high school level whose homogeneity in language proficiency was checked and followed by a pretest. After three weeks of treatment, the achievements of the groups were examined. The data collected were analyzed through one-way ANCOVA. The results revealed that none of the groups outperformed other groups significantly. Also, the results added support to the view that the three inductive strategies were equally effective in promoting the grammar knowledge of the students. As a whole, the study calls for a prominent place for inductive techniques for designing and implementing teaching methods in grammar classes.

In the light of the foregoing, it can be inferred that teaching grammar through guided discovery learning appears to have been understudied in foreign language contexts. Besides, investigating the differences between teenage and adult learners' development of syntactic structures has received little attention. Hence, the following research questions were addressed in this study:

RQ1: Does guided discovery learning have any statistically significant effect on the development of teenage learners' syntactic structures?

RQ2: Does guided discovery learning have any statistically significant effect on the development of adult learners' syntactic structures?

RQ3: Are there any significant differences in the development of teenage and adult learners' syntactic structures development affected by guided discovery learning?

Methodology

The present study was conducted through a quasi-experimental design to address the research questions of the study. In other words, by employing a pre-test post-test design, the present study investigated the effect of using guided discovery learning (as the independent variable) on EFL teenage and adult learners' development of syntactic structures (as the dependent variable).

The Participants

The participants were chosen from the two age groups (teenagers and adults) of Iranian EFL learners in an institute in Alashtar city, Lorestan province. There were 56 students, from

whom the final sample was chosen. Prior to the analysis, the participants were given a pretest to see if they were homogeneous and had the same degree of language proficiency. The selected participants in this study were 34 students, 17 of whom were teenagers and 17 were adults. The age range of teenagers was 12 to 18, and the age range of young adults was between 18 and 30 years old. The participants were male language learners, and there was no female learner in this study. They were at an intermediate level of language proficiency.

As far as participants' selection was concerned, the issue of sampling had to be taken into account. The present study selected the target participants according to the purposeful convenience sampling approach since, as Dornyei (2007) argues, the researcher benefits from selecting the participants who are available at the time of doing the study and purposefully opts for the target participants. It has to be added that all participants had to sign the consent form for participating in the research, and they could quit the course whenever they liked. In fact, they took part in the study voluntarily, and the researchers informed them of the research purposes.

Instruments and Materials

The instruments below were used by the researchers:

The Longman Proficiency Test

The test included 100 multiple-choice items aiming to determine the students' general proficiency, but in this study to ensure the participants' homogeneity at the outset of the study. It involved vocabulary and grammar questions. The participants whose scores were one standard deviation below and above the mean score were considered intermediate learners, forming the final participants of the study.

Pre-test and post-test of Syntactic Structures

The pre-test, which was adopted from Richards and Bohlke (2011) and validated by Cambridge Assessment English, was used to determine the participants' knowledge of English syntactic structures. The test was checked for validity by Iranian TEFL experts, and it was then piloted with 15 learners for assessing its reliability. Having met the assumptions of a standard test, it was used to assess the participants' ability to understand syntactic structures prior to the treatment. The participants were asked to answer several questions about syntactic constructs in the English language as part of the pre-test. The pre-test

included 61 items with a variety of fill-in-the-blank items, aiming to measure the learners' syntactic knowledge. It is worth mentioning that the immediate and two delayed post-tests had the same items of the pre-test, but with reshuffled items.

Data Collection Procedures

First of all, in this study, the participants were not selected in a controlled way, and they were in intact classes. To be more exact, both of the classes were assigned to specified treatments. The participants were then divided into two groups based on their age. Teenagers aged 12 to 18 years old made up the first category, while adults aged 18 to 30 years old made up the second. The participants were then given a pretest to see if they were all at the same level of language proficiency. Then, the two groups received the treatment which was teaching syntactic structures through guided discovery learning. Since the main aim of the study was to find out the effects of guided discovery learning on the development of syntactic knowledge of the mentioned age groups, the researchers did not consider any control group. Furthermore, the number of participants was not so high that the researchers could have three separate groups.

Since the term syntactic structure was very broad in scope and this study was going to be conducted in a language institute, the researchers did not teach all the syntactic structures of the English language. Therefore, in the treatment, the syntactic structures of the *Four Corners 3* were taught using guided discovery learning. The same training and teaching materials regarding syntactic structures of the English language were used in both groups. In this study, there were 18 sessions for teaching syntactic structures in the two groups, and a post-test was given to the participants every two weeks after the pretest to see their gradual progress. Then, at the end of the treatment, they were given a final post-test to determine their final achievement, and then the means of these tests were compared against each other and analyzed to see whether guided discovery learning has been effective for teaching English syntactic structures, if yes, which age group has benefited more from the instruction and which one has made a significant difference by instruction.

In the treatment, the syntactic structures were presented through the guided discovery learning method which has four steps. At the first step, syntactic structures were presented through sample texts or in context and they might be presented through isolated sentences. The language was then observed and analyzed using guided questions as the second stage. The instructor facilitated the observation and examination of the language in this phase by

drawing attention to the key points he wished to emphasize. This could be achieved by asking questions, filling in blanks in sentences or rules, or matching examples and rules. The rules are specified in the third phase. The instructor used the knowledge from phase 2 to state, or had the students state the rule in order to ensure that all students understood it. Learners developed their new knowledge according to their own experiences from the previous step's observations. The fourth stage involved putting the rule into effect on tasks of varying difficulty and complexity. The students had to put the rules into practice in this phase.

Data Analysis Procedure

Quantitative methodology was used to descriptively and inferentially analyze the research questions of the study. Descriptive statistics was concerned with the learners' mean scores while inferential measures included paired and independent samples t-tests. Paired samples-test was run in order to figure out the effect of guide discovery learning on teenage and adult learners' development of syntactic structures. However, independent samples t-test was conducted to figure out the differential effect of guided discovery learning on teenage and adult EFL learners' development of syntactic structures.

Results

The First Research Question

The first research question of the study examined the effects of guided discovery learning on teenage learners' development of syntactic structures. Initially, descriptive statistics for the pre-test and post-test are presented in Table 1.

Table 1. *Descriptive Statistics for the Teenage learners' Pre-test and post-test*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	11.29	17	1.105	.268
	post	14.47	17	.874	.212

Table 1 showed an increase in the mean scores of the pre-test [M = 11.29; SD = 1.10] to the post-test [M = 14.47; SD = .87]. In order to identify if there existed a significant difference between the mean scores, inferential statistics, namely a paired samples t-test, was run, the results of which are presented in Table 2.

Table 2. *Paired Samples T-Test for the Teenage learners' Pre-test and Post-test*

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig (2-tailed)
					Lower	Upper			
Pair 1	pre-post	-3.176	.636	.154	-3.503	-2.850	-20.59	16	.000

Table 2 revealed that there was a significant difference between the pre-test and post-test of the teenager group [t (16) = -20.59; p = .00<.05]. In fact, guided discovery learning had a statistically significant effect on the development of teenage learners' syntactic structures. Thus, it could be concluded that the first null hypothesis of the study was rejected.

The Second Research Question

The second research question of the study examined the effects of guided discovery learning on adult learners' development of syntactic structures. Initially, descriptive statistics for pre-test and post-test of the adult learners is provided in Table 3.

Table 3. *Descriptive Statistics for the Adult Learners' Pre-test and Post-Test*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	12.47	17	1.375	.333
	post	17.94	17	1.144	.277

Table 3 demonstrated that there was an increase in the adult learners' mean scores from the pre-test [M = 12.47; SD = 1.37] to the post-test [M = 17.94; SD = 1.14], which denoted that guided discovery learning could possibly result in improving the adult EFL learners' syntactic structures. In order to show whether there existed a significant difference between the learners' mean scores in the pre-test and post-test, paired samples t-test was run in the following table.

Table 4. *Paired Samples T-Test for the Adult Learners' Pre-test and Post-test*

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig (2-tailed)
					Lower	Upper			
Pair 1	pre-post	-5.471	.943	.299	-5.956	-4.986	-23.91	16	.000

As shown in Table 4, the level of significance was less than .05 [t(16)= -23.91; p = .000<.05], highlighting the significant difference between the adult group's mean scores of the pre-test and post-test. Therefore, it could be stated that guided discovery learning had a statistically significant effect on the development of adult learners' syntactic structures, leading to the rejection of the second null hypothesis of the study.

The Third Research Question

The third research question of the study investigated the differences between teenage and adult learners' development of syntactic structures affected by guided discovery learning. Table 5 presents the results of the descriptive statistics for the two groups' pre-test and post-test.

Table 5. *Descriptive Statistics for the Teenage and Adult Learners' Pre-test and Post-test*

		N	Mean	Std. Deviation	Std. Error
Pre	Teenager	17	12.12	1.269	.308
	Adult	17	12.29	1.263	.306
post1	Teenager	17	12.41	1.004	.243
	Adult	17	14.18	1.551	.376
post2	Teenager	17	13.41	1.004	.243
	Adult	17	16.00	1.414	.343
post3	Teenager	17	14.47	.874	.212
	Adult	17	17.94	1.144	.277

Table 5 indicates that both teenager and adult groups had similar performances in the pre-test scores [M = 12.12; SD = 1.26; M = 12.29; SD = 1.26], respectively. However, adult learners' post-test scores gradually developed from the immediate post-test [M = 14.18; SD =

1.55] followed by the two delayed post-tests [M = 16.00; SD = 1.41; M = 17.94; SD = 1.14] in contrast to the teenage learners' post-tests [M = 12.41; SD = 1.00; M = 13.41; SD = 1.0; M = 14.47; SD = .87]. In order to inferentially address the possible significant differences among the groups' development of syntactic structures development, inferential measures were conducted as provided in Table 6.

Table 6. *Independent Samples T-Tests for the Teenage and Adult Learners' Post-Tests*

		Levene's Test for Equality of Variance		**t-test for Equality of Means**					
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean difference**	**95% Confidence Interval of the Difference**	
								Lower	**Upper**
Pre	Equal variances assumed	.027	.871	-.406	32	.687	-.176	-1.061	.708
	Equal variances not assumed			-.406	31.999	.687	-.176	-1.061	.708
post1	Equal variances assumed	5.772	.022	-3.93	32	.000	-1.76	-2.677	-.852
	Equal variances not assumed			-3.93	27.40	.001	-1.76	-2.683	-.846
post2	Equal variances assumed	2.469	.126	-6.15	32	.000	-2.58	-3.445	-1.732
	Equal variances not assumed			-6.15	28.85	.000	-2.58	-3.449	-1.728
post3	Equal variances assumed	.731	.399	-9.93	32	.000	-3.47	-4.182	-2.759
	Equal variances not assumed			-9.93	29.93	.000	-3.47	-4.184	-2.757

Table 6 illustrates that there were significant differences between the teenage and adult learners' development of syntactic structures regarding their immediate post-test [t(32) = -3.93; p = .000<.05], first delayed post-test [t(32) = -6.15; p = .000<.05], and second delayed post-test [t(32) = -9.93; p = .000<.05]. In other words, there were significant differences in the development of teenage and adult learners' syntactic structures development affected by guided discovery learning, acknowledging the outperformance of the adult learners over the teenager ones.

Discussion

This study comparatively investigated the effect of the guided discovery learning approach on teenage and adult learners' syntactic structure development. In fact, this study sought to answer the question that if there is any significant difference between teenagers and adults in learning English syntactic structures by using the guided discovery learning approach. The results showed that both groups improved significantly within themselves in learning English syntactic structures by using guided discovery learning. But there was a significant difference between teenagers and adults in syntactic structures development using the guided discovery learning method in favor of the adults. In fact, adults outperformed teenagers in learning syntactic structures by using guided discovery learning but the teenager's group also improved significantly within itself because there was a significant difference between the pretest and the last posttest of this group.

As to the findings of the study that verified the effectiveness of guided discovery learning, the results are in alignment with a study conducted by Alcaraz and Isabel (2018) who asserted that the guided discovery approach can succeed in contexts with both children and adult learners over explicit-deductive or implicit-inductive instructions because this approach can be adapted to the learners' necessities depending on whether they are adults or children. The findings of the study are also in agreement with Simamora et al. (2019) and Pratiwi et al. (2021) who found that using guided discovery learning can enhance learners' potential for developing their critical thinking and problem-solving skills. In addition, the findings of this study are empirically supported by Alfieri et al. (2011) who explored the effects of guided-based instruction on enhancing learning. The unassisted discovery was found to be less beneficial for learners, whereas feedback, worked examples, scaffolding, and elicited explanations could result in learners' active learning. As to the present study, the teacher's use of guided questions helped learners to be cooperatively involved in discovery

learning, which led to the development of syntactic features. In other words, the learners were able to self-regulate their knowledge of grammar and be sufficiently triggered to foster their analytical thinking in doing the grammar tasks, all of which resulted in their improvement of learning syntactic structures.

In accordance with Andrews' (2007) contribution, Nazari (2013) and Rodriguez (2009) also support the outperformance of adult learners when they are taught explicitly because they have always been taught according to traditional methods of education which are explicit. But this study revealed that adult learners have outperformed teenagers in learning syntactic structures using guided discovery learning which is an inductive or implicit way of teaching. Furthermore, Klahr (2009) emphasized that there are times when more explicit instruction or at least directive guidance is optimal. Although Klahr's (2009) concerns were in teaching the control of variables strategy (CVS), his arguments regarding instructional times, feedback, instructional sequences, and generalization of skills emphasize that in certain situations some amount of direct instruction is advantageous.

Conclusion

The guided discovery learning method is an effective method for teaching syntactic structures because the learners improved significantly regarding syntactic structures using the guided discovery learning method. Then it can be concluded that guided discovery learning is a great technique for teaching grammar or syntactic structures. Based on the results of the study, we can claim that using the guided discovery learning method can enhance the development of syntactic structures or grammar.

Since grammar is important to be taught in the field of ELT, the way to teach it effectively is the most essential issue. So, there are some pedagogical implications that can be suggested to provide fruitful guidelines related to learning grammar.

Teachers can teach syntactic structures or grammar by using the guided discovery learning method according to the age of the learners. Using guided discovery learning for teaching syntactic structures is effective for both age groups (i.e. teenagers and adults), but adults benefit from the guided discovery learning method more than teenagers.

Teachers can use the guided discovery learning method for teaching grammar at schools and language institutes because it is an effective method. By knowing the learners' age, teachers will be able to teach grammar by using the more appropriate method.

This study suffers from some limitations. In this study, just teenagers and adults were

studied and researched. Further studies can be conducted to include all age ranges. In this study, age was a very important factor. Further studies can be conducted focusing on some other related factors such as gender, intelligence, and proficiency level. Finally, more studies also can be done on a larger number of learners with more periods of time so as to increase the generalizability of the findings.

References

Alcaraz, C., & Isabel, M. (2018). Benefits of guided discovery grammar instruction in the EFL classroom. *Psychology, 103*(1), 1-18.

Alfieri, L., Brooks, P. J., Aldrich, N. J., & Tenenbaum, H. R. (2011). Does discovery-based instruction enhance learning? *Journal of educational psychology, 103*(1), 1-13.

Andrews, K. L. Z. (2007). The effects of implicit and explicit enstruction on simple and complex grammatical structures for adult English language learners. *TESL-EJ, 11*(2), 1-16.

Behjat, F. (2008). Inductive vs. deductive grammar instruction and the grammatical performance of EFL learners. *Journal of English Language Pedagogy Practice, 1*(Inaugural Issue), 1-13.

Clark, R. E. (2009). How much and what type of guidance is optimal for learning from instruction? In S. Tobias and T. M. Duffy (Eds.), *Constructivist instruction: Success or failure?* (pp. 158-183). Taylor & Francis Group.

Dornyei, Z. (2007). *Research methods in applied linguistics.* Oxford University Press.

El-Kahlout, Y. A. (2010). *The effectiveness of using guided discovery on developing reading comprehension skills for the eleventh graders in Gaza Governorates.* [Unpublished master's thesis]. Al-Azhar University-Gaza.

Ellis, R. (2001). *Form-focused instruction and second language learning.* Blackwell Publishers.

Ellis, R. (2006). Current issues in the teaching of grammar: An SLA perspective. *TESOL Quarterly, 40*(1), 83-107.

Esmailizadeh, F., & Tabatabaee Lotfi, S. A., & Ashari Tabar, N. (2019). The effects of guided-discovery, self-discovery, and situational-presentation techniques on learning conditional sentences in English. *Applied Linguisics Research Journal of educational psychology*, *3(3)*, 51-63.

Fromkin, V., Rodman, R., & Hyams, N. (2018). *An introduction to language*. Cengage Learning.Haight, C. E., Herron, C., & Cole, S. P. (2007). The effects of deductive and guided inductive instructional approaches on the learning of grammar in the elementary foreign language college classroom. *Foreign Language Annals, 40*(2), 288-310.

Hird, j. (2015). *Inductive and deductive grammar teaching: what is it, and does it work?*. Retrieved from https://oupeltglobalblog.com/tag/jon-hird/

Klahr, D. (2009). To every thing there is a season, and a time to every purpose under the heavens: What about direct instruction? In S. Tobias and T. M. Duffy (Eds.), *Constructivist instruction: Success or failure?* (pp. 291-310). Taylor & Francis Group.

Nassaji, H., & Fotos, S. S. (2011). *Teaching grammar in second language classrooms: Integrating form-focused instruction in communicative context*. Taylor & Francis.

Nassaji, H., & Tian, J. (2010). Collaborative and individual output tasks and their effects on learning English phrasal verbs. *Language Teaching Research*, *14*(4), 397-419.

Nazari, N. (2013). The effect of implicit and explicit grammar instruction on learners' achievements in receptive and productive modes. *Procedia-Social and Behavioral Sciences, 70*, 156-162.

Nunan, D. (2015). *Teaching English to speakers of other languages: An introduction*. Routledge.

Permatasari, D., & Laksono, W. (2019). Exploring guided discovery learning: The effect on students' integrated ability and self-regulated in Chemistry. *Journal of Physics: Conference Series, 1233,* 1-11.

Pratiwi1, A. Y., Rusilowati, A., & Nugroho, S. E. (2021). The use of online learning science materials in guided discovery to enhance student independence. *Educational Management, In Press Articles,* 1-11.

Richards, J. C., & Bohlke, D. (2011). *Four corners 3 assessment*. Retrieved from https://www.cambrige.org/gb/cambidgeenglish/catalog/adult-courses/four-corners/four-corners-level-3-teachers-edition-assessment-audio-cd-cd-rom

Rodriguez, A.G. (2009). *Teaching grammar to adult English language learners: Focus on form.* CAELA Network Brief. Center for Adult English Language Acquisition.

Saumell, V. (2012). *Guided discovery for language instruction: A framework for implementation at all levels*. Pearson.

Schunk, D. H. (2012). *Learning theories: An educational perspective*. Pearson Education.

Shadiq, F. (2009). *Junior high school Mathematics learning models*. Ministry of National Education's P4TK Mathematics.

Shieh, C. J., & Yu, L. A. (2016). Study on information technology integrated guided discovery instruction toward students learning achievement and learning retention. *Eurasia Journal of Mathematics, Science & Technology Education, 12*(4), 833-842.

Simamora, R. E., Saragih, S., & Hasratuddin, A. (2019). Improving students' Mathematical problem solving ability and self-efficacy through guided discovery learning in local culture context. *International Electronic Journal of Mathematics Education, 14*(1), 61-72.

Vahdat, S., Hayati, A. M., & Pourmoradi, V. (2017). The effect of inductive-deductive teaching on the grammar learning of the field dependent-independent Iranian EFL language learners. *Modern Journal of Language Teaching Methods, 7*(3), 392.

Verner, S. (2018). *The discovery technique for teaching grammar*. Retrieved from https://busyteacher.org/20580-discovery-technique-teaching-grammar.html

Williams, M., & Burden, R. L. (1997). *Psycology for language teachers*. Cambridge University press.

Yerizon, Putra, A. A., & Subhan, M. (2018). Mathematics learning instructional development based on discovery learning for students with intrapersonal and interpersonal intelligence (preliminary research stage). *International Electronic Journal of Mathematics Education, 13*(3), 97-101.

Zare Behtash, E., & Bamadi, F. (2014). *The impact of inductive vs. deductive approaches of teaching grammar on Iranian elementary EFL learners' grammar achievement.* [Unpublished master's thesis]. Chabahar Maritime University.