

## **Grammar Strategies-Based Instruction and EFL Iranian Learners' Achievement of Grammar: A Mixed Model**

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### **Abstract**

The present study aimed to address an area of language learner strategies research which has not received the same attention as reading, writing, speaking, listening, and vocabulary strategies in spite of the significant role of grammar in the conceptualization of language competence. The paucity of empirical investigations in intervention research concerning grammar strategies was the impetus to carry out a grammar strategies-based instruction on the basis of several models including Oxford's strategic self-regulated model of learning to see its effects on learners' achievement of grammar across different age groups and proficiency levels. To this end, six groups of Iranian EFL learners, comprising 63 high school and 96 university students, were chosen from intact classes in Hamedan(Iran) for control and experimental groups. The treatment focusing on comparison of adjectives and adverbs, relative clauses, articles and prepositions continued for ten sessions after the administration of proficiency tests, pre-tests and immediate and delayed post-tests. The results of ANCOVA revealed meaningful differences between control and experimental groups. However, the variables of age and proficiency contributed to the significance of differences among the groups. Generally, the treatment proved to be especially useful for younger learners at lower proficiency levels. In addition, the delayed effect of the treatment was quite noticeable in all experimental groups. The findings stressed the usefulness of GSBI for EFL learners, which requires that teachers, material developers and syllabus writers consider the potentiality of such a strategy instruction for the development of EFL learners' grammar proficiency.

**Keywords:** grammar strategies (GSs), grammar strategies-based instruction (GSBI), language learner strategies (LLSs), strategic self-regulated (S<sup>2</sup>R) model of learning

### **Introduction**

As Macaro (2009) mentions, language learning strategies (LLSs) came into being as a result of a shift of interest towards the language learner rather than the teacher or the method and the changes in conceptualizations of language competence and language learning. On one hand, the early attempts to describe good language

learners (GLLs)(Rubin, 1975; Stern, 1975; Naiman, Frolich, Stern, and Todesco, 1978) gave lists of language learning strategies. On the other hand, searching for communicative competence (Hymes, 1967; Canale & Swain, 1980; Farch & Kasper, 1983; Wong-Fillmore, 1979; Backman, 1990, all cited in Macaro, 2009) established the place of strategies within the reformulations of competence.

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Ever since its appearance, different aspects of LLSs have been researched and revolutionized: the good language learner studies, taxonomies of strategies, factors influencing strategy use, narrow and broad sense of strategies, declarative and procedural knowledge, kinds of strategies, strategy cluster and chain, strategy training and specific tasks, strategies for learning a skill (listening, reading, speaking, writing, vocabulary, and grammar), strategies for learners in distance learning courses, test-taking strategies, and research on validating measures of learner strategies (Cohen & Macaro, 2007; Cohen, 2011).

Out of the above-mentioned research areas, the researcher aimed to focus on an area of LLS –grammar strategies (GSs) – which has received scant attention in spite of the high priority of using points of grammar accurately, meaningfully and appropriately for many learners (Larsen-Freeman, 2003), the facilitative effects of GSs on the work of L2 teachers and their helpfulness for researchers to understand better how people learn another language (Oxford & Lee, 2007).

Another motivation for the present paper originates from intervention research which, according to Chamot (2005), is the investigation of the effect of strategies-based instruction (SBI) on learners' development of language skills and areas in FL or SL environment. To date, research on the effect of grammar SBI on learners' achievement has been quite scarce (Morales & Smith, 2008; Cohen & Pinilla-Herrera, 2010) and has never touched the new conceptualizations of LLSs in relation to grammar learning/use strategies, i.e. strategic self-regulated (S2R) model of learning.

Another direction for the present research comes from the ideas cited in Chamot

(2003, p.126), who called for research on learning strategies instruction conducted with a variety of language students across different proficiency levels, ages, programmes, L1s, learning contexts, and motivational patterns. Investigating these mediating variables along with instructional modes (i.e. implicit vs. explicit, FonF vs. FonFs, and deductive vs. inductive), different dimensions of grammar (form, meaning and use) and [meta] strategies can contribute to the SBI studies and modify the claims made about its effectiveness.

Ellis (2006, p.103), discussing current issues in the teaching of grammar, stresses the need for longitudinal studies that investigate the effects of instruction over time, which is another driving force for the present article. More specifically, he calls for studies that employ qualitative as well as quantitative methods that help to show the delayed effect of instruction, as Hassan, Macaro, Mason, Nye, Smith and Vanderplank (2005), reviewing strategy instruction, called for studies that address both short-term and long-term effects.

To develop LLS in learners, different models have been suggested for both first and second language environments (e.g. O'Malley and Chamot 1990; Oxford 1990, 2006; Cohen 1998; Grenfell and Harris, 2003; Macaro, 2001;; Chamot, 2004, 2005). The model adopted and adapted in this study to teach grammar was based on an amalgamation of Chamot's (2005) five stages of preparation, presentation, practice, self-evaluation and expansion, Oxford's (2011) S<sup>2</sup>R model of learning involving metastrategies (metacognitive, meta-affective, and meta-sociocultural-interactive) and strategies (cognitive, affective, and sociocultural-interactive), Larsen-Freeman's (2002) three-dimensioned model (form-meaning-use) and

"grammaring" strategies, and Oxford and Lee's(2007) instructional modes (implicit (FonM or FonF) or explicit (FonFs) and deductive or inductive) as an innovative way to base strategy training on a wide variety of strategy types. The grammar strategies-based programme in this research was carried out to see its immediate and delayed effects on learner's achievement of grammar across different age groups and different proficiency levels.

## Literature Review

Strategies, according to Anderson (2005, p.757), are observable or mental conscious actions that are employed in isolation or orchestration to improve performance in the learning and use of one's second language. Such strategies have been classified in different ways: strategies for learning and use, strategies according to skill area, and strategies according to function (i.e., [meta] cognitive, [meta] affective, or [meta]social) (Cohen, 2011; Oxford, 2011). In comparison to vocabulary, reading, writing, speaking and even listening, grammar has not received the same attention in terms of strategies. Grammar (Learning) Strategies (G[L]Ss), as a second Cinderella after listening strategies, which maintain its anonymity and remains as yet unexplored, are actions or thoughts that learners consciously employ to make language learning and / or language use easier, more effective, more efficient and more enjoyable (Oxford et al. 2007, p.117).

The theoretical background concerning the approaches to teaching grammatical approaches enable us to follow the following alternatives: explicit or implicit, deductive or inductive, focus on form, focus on forms or focus on meaning (Doughty 2003; Dekeyser 2005; Hulstijn 2003; Ellis 2006). There is a need for research with a learner-

centered perspective to find more techniques associated with these instructional modes.

Different grammatical models have been suggested, including structural grammars, generative grammars and functional grammars. The kind of descriptive grammar which is of relevance to the present paper is the one suggested by Celce-Murica and Larsen-Freeman (1999) and Larsen-Freeman (2003). This three-dimensioned model details the form-meaning-use relationships of the language by providing information about linguistic forms, the semantic meanings and discursual uses realized by particular forms (Ellis, 2008). This form-meaning-use paradigm accounts for different operating modes (i.e. frequency (form), association (meaning), and appropriate choice (use).

As a result of criticism leveled against the construct *strategy* at the theoretical level, overlap in the well-known strategy taxonomies, and a linear relationship between item scores and total scale scores in strategy inventories like SILL (Dornyei, 2005), Oxford (2011) reformulated her basic model (1990) into strategic self-regulated (S<sup>2</sup>R) model of learning, which acted as one of the models to teach grammar strategies in the present research.. In the S<sup>2</sup>R Model, *self-regulated L2 learning strategies* as deliberate, goal-directed attempts to manage and control efforts to learn the L2 are broad, teachable actions that learners choose from among alternatives and employ for L2 learning purposes. One of the distinguishing features of this model is the expansion of metastrategies to include meta-affective and meta sociocultural-interactive aspects (Oxford 2011, p. 7).

Learning and using a second language are believed to be enhanced through strategy instruction at different learning settings and across different proficiency levels and age

ranges (Rubin et al., 2007). Comparing all the models of SBI, one can find a sequence of five steps which are common to all and involve decreasing level of scaffolding with an increasing degree of students' responsibility to use strategies independently: initial awareness raising of the extent and types of LLS available to the learners; a phase during which the teacher or peers model the strategies they use; opportunities for the learners to practice using the strategies with the teacher / researcher's support (sometimes referred to as 'scaffolding') ; removal of the support and evaluation of the effectiveness of the SBI (Rubin et al. 2007, p.142; Macaro 2009, p.26).

It is also worthy of note that some factors have been identified that influence SBI: age, the learning context, the nature of the task, and learning style, goals, and background knowledge. However, the present research studied age and proficiency as they can affect the choice of appropriate strategies for older/younger learners and more/less proficient ones, a point that Macaro (2001, p.267) emphasized due to their role in determining the varying degree of scaffolding. The other influential factors were disregarded due to the fact that the manipulation of all variables was beyond the scope of the present endeavor. Rubin et al. (2007) concentrated on age-related levels (i.e. younger and older learners) to emphasize that SBI is not a mechanistic experience, neither for the learner nor for the teacher, but requires reflection and evaluation.

Furthermore, Cohen (2003) names a variety of instructional models for foreign language strategy training that have already been developed and implemented in a variety of educational settings. The model followed in the study is in accordance with

the recommendation that the most effective strategy instruction occurs when it is integrated in the regular classroom instruction (Cohen, 1998; Oxford and Leaver, 1996), explicit treatment is more effective than implicit one, and a flexible combination of L1 and L2 instead of either L1 or L2 is preferred (Rubin et al, 2007).

Reviewing the related literature in LLSs, one can be quite surprised at the very little consideration that has been given to learners' strategies in grammar learning and use in comparison to other areas and skills of second language development (Oxford et al. 2007; Pawlak 2009; Broady & Dwger 2009). This, according to Oxford et al. (2007, p.117), may be due to the low profile of grammar in the communicative language teaching approach that resulted in the researcher's ignorance of GLSs or sliding them into the more general 'cognitive strategy' category. Oxford et al.'s (2007) model to distinguish between three categories of GLSs associated with three main instructional approaches to teaching grammatical structures can serve as a basis for developing a tentative taxonomy of GLS as well as a data collection tool. The categorization of the learning modes and the corresponding GLSs are as follows: (1) GLSs used by learners who are oriented to meaning but occasionally shift attention to form (implicit learning with a FonF) (2) GLSs used by learners who discover patterns and rules on the basis of the input data (explicit inductive learning, and (3) GLSs used by learners who employ the rules presented by the teacher in different types of activities. This descriptive scheme, though not undergoing the process of validation, has been used by very few researchers. For example, Pawlak (2009) investigated the relationship between the use of GLSs reported by 142 English Department

students and TL attainment. The analysis failed to find a strong positive relationship between the use of GLSs and achievement, irrespective of the level of the BA program, or statistically significant differences in this respect between lower-level and higher-level participants.

Cohen's (2008) effort to create a website for learners of Spanish in order to strategize about their grammar is quite innovative in terms of suggesting strategies on the basis of their kind (e.g. making associations) and / or the grammatical structure they are used for (e.g. tenses). In another study, Morales & Smith (2008) gave examples of how the students used strategies involving mental images in order to remember the correct use of grammatical forms (verb inflections, *por-para*, *ser-estar*, direct vs. indirect pronouns, gender of nouns, and article use). The last study, which is also worthy of note, is the one carried out by Bade (2008) who investigated student attitudes towards grammar. The analysis revealed a variation in responses according to the students' immediate needs, prior learning experience and approaches to being taught grammar.

Within the area of grammar strategy instruction, one can find a handful of studies. In his doctorate research, Gimeno (2002) presented the findings of an empirical study, carried out in a Spanish secondary school, which proved the effectiveness of an instructional grammar strategies-based model in helping the students, specially the unsuccessful ones, learn conditional sentences more autonomously and improve their attitude towards foreign language learning. Morales and Smith (2008) studied the effect of exposing American university students of Spanish to mental image associations as a grammar strategy in order to assist them in differentiating the uses of the verbs *ser* and *estar* and found a

greater improvement in the ability to distinguish the correct use of each verb in the experimental group. Another effort at grammar strategy instruction by Cohen & Pinilla-Herrera (2010) involved the construction of a website for learners of Spanish grammar who appreciated the practical nature of the website and the usefulness of the strategies which helped to improve their oral and written work and had a positive effect on their achievement in class.

The area of LLSs, as Raftari, Kashef, Albahrani (2012, p.62) synthesized the research studies in the Iranian context, has attracted many Iranian scholars' attention to identify the strategies used by successful/unsuccessful learners in terms of frequency and type, investigating the relationship between students' use of LLSs and their learning achievement, looking at students' strategic performance in different language skill areas, the factors that affect the learners' use of different learning strategies, and strategy instruction outcomes. However, grammar strategies in general and grammar strategies-based instruction in particular have totally been ignored. The only exception is the one carried out by Esmaeilifard (2010) who found that cognitive instruction does not affect the learners' development of structural knowledge while metacognitive one makes a significant progress in the development of structural knowledge.

### Purpose or the Study

With reference to the gaps referred to in the literature, it seems that no prior study to date has addressed the issue of grammar strategy instruction which revolves around the five steps of preparation, modeling, practice, evaluation and expansion and involves the manipulation of a variety of strategies

coming from different frameworks: strategies (cognitive, affective and sociocultural-interactive), metastrategies (metacognitive, meta-affective and meta-sociocultural-interactive), dimensions of grammar strategies (form, meaning and function), strategies associated with different instructional modes of language learning (implicit (FonF), explicit-inductive (FonFs) and explicit-deductive (FonFs)). In addition to the above objective, the study addressed the effect of factors such as age and proficiency which mediate the role of strategy instruction and the immediate and delayed effect of such a treatment on the development of learners' knowledge of grammar in an EFL environment.

More specifically, the following tentative questions were proposed in accordance with the objectives delineated:

1. Is the effect of GSBI on learners' achievement of grammar mediated by learners' age?
2. Is the effect of GSBI on learners' achievement of grammar mediated by learners' proficiency level?
3. Is there a difference between the immediate and delayed effect of GSBI on learners' achievement of grammar across different age ranges?
4. Is there a difference between the immediate and delayed effect of GSBI on learners' achievement of grammar across different proficiency levels?

## Method

With reference to the research questions discussed above, one can see that the present research is interventional and quantitative (i.e. the effect of manipulation of strategy training in experimental groups). Actually, it is the second phase of a research project beginning with the development of a grammar learning/use strategy inventory and

leading to a GSBI programme which focused on the question whether strategy instruction was effective in the learner's achievement of grammar across different ages and proficiency levels. The following part is a description of the subjects, the materials, data collection procedure and data analysis.

## Participants

To address the research questions with an interventionist orientation, the researcher chose six groups of participants from the available classes in high schools and universities. The groups were divided into three experimental groups and three control groups to manipulate the independent variable of grammar strategy instruction and the mediator variables of age and proficiency. The subjects belonging to high school were all male students who studied at first grade in Hamedan, Iran. However, the subjects making up the university / college groups were male junior students of English with different orientations (i.e. translation and TEFL) and female junior students of economics studying in Buali University and Maghsudi Teacher Training College located in Hamedan, Iran. The subjects came from intact classes with different numbers for each class. Their English background assessed through the administration of grammar diagnostic tests was of restricted or extended type in an EFL environment and was the basis of categorization of them into intermediate and upper-intermediate levels. A description of the sample groups is presented below:

**Table A.** Participants' Characteristics

Group	Name	Number	Sex		Age Range	Proficiency Level
			Male	Female		
A	Experimental Group (High School, Grade 1)	31	31	-	16	Low-Intermediate
B	Control Group (High School, Grade 1)	32	32	-	16	Low-Intermediate
C	Experimental Group (University Students, Economics)	21	-	21	21	Low-Intermediate
D	Control Group (University Students, Economics)	21	-	21	21	Low-Intermediate
E	Experimental Group (University Students, Translation)	36	36	-	21	Upper-Intermediate
F	Control Group (University Students, TEFL)	18	18	-	21	Upper-Intermediate

## Materials

The materials used in the study included 4 kinds of tests and different kinds of lessons designed according to the purpose of the study.

## Tests

**The Proficiency Tests:** Two tests of proficiency, *Oxford Practice Grammar Intermediate/Advanced) Diagnostic Test* (Oxford University Press, 2010), were used to establish the prior background knowledge. The tests contained fifty multiple-choice questions and fifty completion items, covering a wide range of grammar areas.

**Pre- and Post-Tests:** The pre-tests and post-tests (immediate and delayed) which were the same for the paired experimental and control groups contained different item types including multiple-choice questions (completion and error identification),

paraphrase and fill-gap. The number and type of questions in the tests varied in accordance with the learner's age, proficiency level and course of study.

Accordingly, the younger learners of lower proficiency answered fewer questions of easier nature. The tests adapted from different sources for different groups: high school students (Mirtahami, 2010), university students of economics (Walker and Elsworth, 2000) and university students of English (Hopkins, 2007). The results of test reliability are reported in the following part.

The treatment in the experimental and control groups varied in terms of the materials used. All the six groups used the same main textbook prescribed by the curriculum but different supplementary materials. The textbook for high school students was English Book 1 (Birjandi, Nowruzi and Mahmudi, 2012). The grammatical

points covered, comparison of adjectives and adverbs, were presented and practiced in lessons 3,4 and the supplementary material for the control group was originally adopted from Eastwood (1999, pp. 260-269). These grammatical points were chosen out of the possible ones because they, according to the researcher's experience, proved to be quite problematic for the learners of this age and proficiency level. The university students of economics in the control group received the treatment from the same book Eastwood (1999: 330-344), which covered the topic of relative clauses as one of the frequent, problematic and necessary structures in academic and ESP texts. However, the subjects in the group were not taught any other textbooks. For the advanced students whose course of study was English, the major textbook was Frank (1972, pp. 135-161, 181-202). The topics, articles and prepositions, were supplemented by Yule (2006, pp. 68-81, 124-137) for the control group. The rationale behind choosing the grammatical structures for the students of this age and proficiency level was the difficulty that they experience while trying to learn all details and exceptional cases.

The treatment in experimental groups, which was based on grammar strategy instruction, followed a basic lesson plan, but differed in terms of grammatical points covered and grammar strategies employed. The development of materials for the experimental groups was part of a research project, the beginning of which was aimed at the development of a grammar strategy inventory. Therefore, the grammar strategies used were developed from the inventories which were composed of strategies and metastrategies discussed in Oxford's (2011) strategic self-regulated model of learning (i.e. cognitive, metacognitive, affective, meta-affective, sociocultural-interactive and

meta-sociocultural-interactive), Larsen-Freeman's (2003) three-dimension model of grammar (form – meaning – use), and Oxford et al.'s (2007) modes of instruction (i.e. explicit – inductive learning (FonM & FonF) and explicit deductive learning (FonFs).

The other sources of information for finding grammar strategies were elicitation tasks designed for the students taking the courses of grammar, writing and oral reproduction of stories at different universities and learning grammar using high school textbooks. The data was also enriched by consulting different books for learning and teaching grammar and the established questionnaires concerning language skills. A selected list of the strategies taught can be seen in **Appendix 1**.

The main components and the content of grammar strategies-based lessons were developed on the basis of Briggs (1994 a,b), Cohen & Weaver (2005), and Chamot (2001,2004).

### Data Collection Procedure

In line with the objectives of the study, the researcher began the collection of data by administering the two proficiency tests which underwent a pilot study and data analysis. The pre-tests concentrating on the specific grammatical points treated in the groups were administered as a follow-up and the papers collected.

As described above, the treatment in experimental and control groups were tailored according to demands of learner's regular programmes at high school and universities. The integration of treatment in the form of supplementary materials into regular classroom instruction was carried out. The materials in control groups were basically based on three Ps (i.e. presentation, practice and production), while the ones for



experimental groups followed CALLA (Cognitive Academic Language Learning Approach) model proposed by Chamot (2004) and Chamot et al. (1999). The steps followed in each lesson, in Chamot's (2004, p. 22) terms, are as follows: (1) *Preparation*: Teacher identifies students' current learning strategies by discussing about strategies students already use for familiar tasks (2) *Presentation*: Teacher models, names, explains new strategy by thinking aloud as he works through a task; asks students if and how they have used it (3) *Practice*: Students practice new strategy through activities such as cooperative learning ; in subsequent strategy practice, teacher fades reminders to encourage independent strategy use (4) *Self-evaluation*: Students evaluate their own strategy use immediately after practice through activities such as debriefing strategies after using strategies to see which strategies work for them and why (5) *Expansion*: Students transfer strategies to new tasks by teacher's scaffolding in which reminders to use a strategy are gradually diminished, combine strategies into clusters by analysis and discussion of effective Reliability of the test was calculated using Cronbach Alpha. Based on the items and

strategies, develop repertoire of preferred strategies by self-report and thinking skills discussions. The time spent on the instruction in all six groups was almost the same (i.e. around 970 minutes).

After the treatment was over, the post-tests which were the same as the pre-tests in specified groups were administered 3 months after the administration of pre-tests. Again, the administration of the same test took place after an interval (i.e. 3 months) to check the delayed effects of instruction on learners' achievement of grammar. This seems to be necessary due to the fact that previous studies mainly addressed the effectiveness of strategy instruction in the short-term and they totally provide us with no evidence concerning the persistence of its effects over time (Cohen & Macaro, 2007). At the same time, data about the learner's age was also collected.

## Data Analysis

All the tests underwent pilot study in similar groups (i.e. high school and university students).

participants, alphas were reflecting sufficient levels of internal reliability.

**Table B.** Cronbach Alphas of Grammar and Proficiency Tests

Group	High School (Grammar Test)	Economics (Grammar Test)	English (Grammar Test)	Proficiency (Intermediate)	Proficiency (Advanced)
Alpha	0.76	0.82	0.75	0.85	0.83
No of Participants	63	42	54	105	54
No of Items	20	30	60	100	100

The results of item analysis (i.e. item difficulty, item discrimination, and distractor efficiency) were employed to make modifications in the pre- and post – tests.

To ensure the normality of data, the researcher used one-sample Kolmogorov-Smirnov test. The results indicating the normality of data can be observed in the following table:

Table C. Normality of Data (One-Sample Kolmogorov-Smirnov Test)

Tests		Proficiency Test	Pre-Test	Post-Test 1	Post-Test 2
N		28	28	28	28
Normal Parameters	Mean	30.78	7.1	12.4	16.5
	SD	7.5	1.7	3.2	2.9
Most Extreme Differences	Absolute	.19	.23	.15	.18
	Positive	.19	.24	.13	.12
	Negative	-.09	-.15	-.14	-.17
Kolmogorov-Smirnov Z		1.01	1.26	.77	.94
Asymp. Sig. (2-tailed)		.26	.08	.58	.33

To answer the research questions, the results were tabulated by marking each item correct for each participant in the groups and entered on to a spreadsheet for carrying out statistical analyses (i.e. SPSS).

The main research question focused on the effect of GSBI on learner's achievement. To control the homogeneity of groups in terms of prior grammar knowledge, the researcher used independent – group t-tests. Accordingly, the mean scores and standard deviations for the six groups' scores in pre-tests and immediate and delayed post-tests were determined. In order to determine if the differences in scores were significant, one variable covariance (ANCOVA) was run and followed by post hoc LSD.

To answer the research questions asking whether learners' age and proficiency levelmediate the effect of GSBI on learner's achievement of grammar, the researcher collected data from two groups at the age of 16 and four groups at the age of 21and four groups at intermediate level and two groups at upper-intermediate leveland analyzed the resultant data using ANCOVA, followed by post hoc LSD if needed.

The following questions concerning the role of learners' age and proficiency level in mediating the effect of GSBI on Learners' achievement of grammar and the difference

between the immediate and delayed effect of GSBI on learner's achievement were answered in the light of findings based on the statistical procedure of ANCOVA, followed by post hoc LSD if needed.

Finally, to find out the effect size of the proposed intervention (**questions 1 to 4**), the researcher entered the results of pre-tests and post-tests into SPSS program. This way, the effect of moderator variables of age and proficiency level was furtherstudied.

Results

Independent t-tests were run to see whether there is meaningful difference between experimental and control groups in terms of grammar knowledge. Table 4 shows that there is not meaningful difference between the groups (p>0.05). In other words, the results indicate that control and experimental groups were at a similar level of grammar proficiency operationalized by proficiency tests at two levels (i.e. intermediate and advanced):

**Table D.** Independent T-Tests (Pairwise Comparisons) for Proficiency Tests

Group1	Group2	t	df	Sig.
Experimental Group(High School Students,grade1)	Control Group (High School Students, Grade 1)	-1.28	61	0.203
Experimental Group (University Students, Economics)	Control Group (University Students, Economics)	0.19-	38	0.844
Experimental Group (University Students, Translation)	Control Group (University Students, TEFL)	0.27	52	0.471

Accordingly, the research questions were studied and the relevant data was analyzed, the main findings of which are presented below:

### **The effect of GSBI on learner' achievement of grammar across different ages**

The first research question asked whether the effect of GSBI on learners' achievement of grammar is mediated by learners' age. **Table E** displays the descriptive statistics for the performance of four groups (i.e. two groups at the age of 16 and two groups at the age of 21).

**Table E.** Descriptive Statistics for the Subjects' Performance in Pre- and Post-tests across Different ages

Age Group	Experimental Group				Control Group		
	Test	Number	SD	mean	Number	SD	
16 years old	Pre-Test	31	5.35	21.67	32	7.53	29.62
	Post-Test(1)	31	8.89	49.45	32	11.49	44.62
	Post-Test(2)	31	10.12	38.32	32	12.83	36.65
21 years old	Pre-Test	57	8.24	26.36	39	9.47	26.16
	Post-Test(1)	57	9.93	28.22	39	9.71	26.51
	Post-Test(2)	57	9.76	32.44	39	8.32	26.83

As it is clear in the table, there are apparent differences between the means of four groups (i.e. the scores of experimental groups being higher than those of control

groups). However, in order to answer the question, a one-way ANCOVA meeting

the assumptions of parametric research such as normality, linearity, and homogeneity of regression lines was run to see if such

differences among mean scores were statistically significant or not. The results of the used ANCOVA are presented in **table F** below:

**Table F.** Tests of between-subjects effects for the performance of subjects of different ages in pre-tests and the first post-tests

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	18290.09	4	4572.52	66.46	0.000
Intercept	3895.22	1	3895.22	56.62	0.000
Pre-test	4551.80	1	4551.80	66.16	0.000
group	15405.66	3	5135.22	74.64	0.000
Error	9493.64	138	68.79		
Total	214410.00	143			

On the basis of the results, it can be concluded that there is a meaningful difference between the four groups ( $F=74.64$ ,  $p<0.01$ ). In other words, it can be said that the treatment (GSBI) was

significantly effective in the learning of groups. To locate the place where the treatment was the most effective, post hoc LSD was run, the results of which are shown in the following table:

**Table G.** Pairwise Comparisons (LSD) for the groups' performance in grammar tests at different ages

(I) group2	(J) group2	Mean Difference	Std. Error	Sig.
Experimental Group(16 years old)	Control Group (16 years old)	10.61	2.20	0.00
Experimental Group(21 years old)	Control Group (21years old)	1.55	1.90	0.41

With reference to the table, it can be observed that there is meaningful difference between control and experimental groups at the age of 16 ( $p<0.01$ ), while it is not the case for the subjects at the age of 21 ( $p>0.05$ ). In other words, with 99% confidence interval, it can be said that the intervention (i.e. GSBI) caused significant meaningful difference for the participants at the age of 16, but it was not effective in the learning of grammar among the university students at the age of 21.

### **The effect of GSBI on Learners' achievement of grammar across different proficiency levels**

The second research question asked whether GSBI caused meaningful differences in the grammatical performance of learners across different proficiency levels (i.e. low intermediate and high intermediate).

The rationale for the division was the educational level of the students (high school or university), their course of study

(i.e. Economics or English) and above all their performance in the proficiency tests (i.e. *Oxford's Intermediate and Advanced Diagnostic Tests of Grammar*), as it is presented in the following table:

**Table H.** Means of the groups' performance on proficiency tests

Groups	Test	Mean	Proficiency level
High school, Grade 1	Intermediate	32.37	Low Intermediate
University ( Economics)	Intermediate	37.40	Low Intermediate
University (English)	Advanced	52.70	High Intermediate

As a result, the participants were placed in two groups of low-intermediate level of grammar proficiency (i.e. one control group and one experimental group) and two groups of high-intermediate level of grammar proficiency (i.e. one control group and one experimental group). The collected data on the basis of subjects' performance

in pre- and post-tests was used to run one-way ANCOVA, given the assumptions of parametric research. **Table I** provides the descriptive statistics for the performance of groups across different tests:

**Table I.** Descriptive statistics for the groups' performance in pre- and post-tests across different proficiency

Experimental Group					Control Group		
	Test	Number	SD	Mean	Number	SD	Mean
LOW	Pre-Test	52	6.52	22.23	53	7.74	27.10
	Post-Test(1)	52	14.17	41.83	53	14.89	37.49
	Post-Test(2)	52	11.74	32.27	53	12.87	31.67
HIGH	Pre-Test	36	8.99	29.11	18	9.97	29.42
	Post-Test(1)	36	9.70	29.31	18	7.09	28.89
	Post-Test(2)	36	6.41	38.60	18	7.27	30.47

As presented in **table I**, there is a meaningful difference between the groups in terms of mean scores. The means in the experimental group are higher than those of control groups. **Table J** summarizes the results of

ANCOVA which was run to locate the place of significant difference in experimental groups:

**Table J.** Tests of between-subjects effects for the groups' performance in grammar tests across different proficiency levels

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11845.313a	4	2961.328	25.012	0.000
Intercept	1394.66	1	1394.66	11.78	0.001
Pre-test	7421.55	1	7421.55	62.68	0.000
group	8330.27	3	2776.76	23.45	0.000
Error	17996.05	152	118.39		
Total	234.34.00	157			
Corrected Total	29841.37	156			

According to the results presented in **table J**, there is a meaningful difference between the mean scores of the four groups ( $F=23.45$ ,  $p<0.01$ ). That is to say, the treatment was quite effective in the

learning of grammar. The statistical procedure was accordingly followed by post hoc LSD to locate the group with the most significant mean difference, as displayed in **table K**:

**Table K.** Pairwise comparisons (LSD) for the groups' performance in grammar tests across different proficiency levels

(I) group2	(J) group2	Mean Difference	Std. Error	Sig.
Experimental Group (LOW)	Control Group ( LOW )	8.59	2.21	0.00
Experimental Group (HIGH)	Control Group ( HIGH)	1.56	3.14	0.62

The results indicated a meaningful difference in the mean scores of control and experimental groups in low-intermediate level ( $F=8.59$ ,  $p<0.01$ ). However, the difference between the mean scores of the groups in high-intermediate level was not significant ( $F=1.56$ ,  $p>0.05$ ). To put it in other words, it seems highly likely that GSBI was quite effective in the grammar learning at low-level of proficiency with 99% confidence interval, while there is little possibility that it was effective for the students of high proficiency.

### **The difference between the immediate and delayed effect of GSBI on learners' achievement of grammar across different ages**

The third question asked whether GSBI causes significant difference in grammar recall among different age groups. **Table L** shows the results of ANCOVA which was run to locate the place of difference in the performance of age groups (i.e. the ages of 16 and 21) in delayed post tests administered three months later:

**Table L.** Tests of between-subjects effects for the groups' performance in the second post-tests across different ages

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8069.77	4	2017.44	30.15	0.000
Intercept	1844.31	1	1844.31	27.56	0.000
Pre-test	5600.72	1	5600.72	83.70	0.000
group	3526.70	3	1175.76	17.56	0.000
Error	9233.58	138	66.90		
Total	177283.00	143			

As the results reveal, the difference between the mean scores of four groups is meaningfully significant ( $F=17, 57, p<0.01$ ). This suggests that the treatment had delayed effects on the learning of grammar. The results of post hoc LSD, as presented in **table M**, revealed a meaningful

difference among the mean scores of experimental and control groups in both age ranges ( $F=8.09, 5.44, p<0.01$ ). In other words, it is highly probable that GSBI was effective in the recall of grammar by the subjects at the ages of 16 and 21.

**Table M.** Pairwise comparisons (LSD) for the groups' performance in the second post-tests across different ages

(I) group2	(J) group2	Mean Difference	Std. Error	Sig.
Experimental Group(16 years old)	Control Group (16 years old)	8.09	2.17	0.000
Experimental Group(20 years old)	Control Group (20 years old)	5.44	1.87	0.004

### **The difference between the immediate and delayed effect of GSBI on learners' achievement of grammar across different proficiency levels**

The forth question asked whether GSBI causes significant difference in grammar recall among

subjects at different levels of proficiency. The statistical procedure of ANCOVA was run to see which experimental group at different levels of proficiency benefited the most from GSBI in terms grammar recall, summarized in **table N**:

**Table N.** Tests of between-subjects effects for the groups' performance in the second post-tests across different proficiency levels

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6610.62	4	1652.66	20.30	0.000
Intercept	2183.05	1	2183.05	26.81	0.000
group	5190.67	1	5190.67	63.75	0.000
Error	1364.81	3	454.94	5.59	0.001
Total	12376.14	152	81.42		

According to the results, it can be observed that there is a meaningful difference between the performance of four groups at different levels of

proficiency, control and experimental groups at low-intermediate and high-intermediate levels of proficiency ( $F=63.75$ ,  $p<0.01$ ). That is to say, the treatment caused

significant difference in the performance of experimental group members. As a follow-up, post hoc LSD was run, the results of which are given in the following table:

**Table O.** Pairwise comparisons (LSD) for the groups' performance in the second post-tests across different proficiency levels

(I) group1	(J) group2	Mean Difference	Std.Error	Sig.
Experimental Group(LOW)	Control Group ( LOW )	4.16	1.83	0.25
Experimental Group (HIGH)	Control Group ( HIGH)	8.82	2.60	0.001

As the results demonstrate, the meaningful difference between the control and experimental groups in terms of grammar recall ( $F= 4.16, 8.82$ ,  $p<0.05$ ) must be contributed to GSBI in both low and high levels of proficiency with 95% and 99% confidence interval respectively.

In addition to the above questions, the effect size of GSBI on the learning and recall of grammar across different ages and proficiency levels was investigated. **Table P** displays the scores of effect size:

**Table P.** The effect size of treatment (GSBI) on the research variables of age and proficiency

Group	Learning		Recall	
	Effect Size	Cohen Index	Effect size	Cohen index
Age of 16	1.5	High	0.9	High
Age of 21	0.2	Low	0.98	High
Low-Intermediate	0.59	Average	0.86	High



High-Intermediate	1.42	High	0.25	Average
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With respect to the observed degrees of effect size, it can be said that GSBI was the most effective in the learning of grammar among participants at the age of 16 and high-intermediate level and the least effective among learners at the age of 21. Meanwhile, the treatment highly benefited the learners at the ages of 16 and 21 and low-intermediate level. The effect of such an intervention on high-intermediate students was average.

## Discussion

On the whole, the results indicate that the intervention, i.e. GSBI, has generally benefited the subjects in the experimental groups. The treatment, which was based on the five stages of strategy instruction, proved to be more effective than the traditional methods revolving around three Ps. The researcher's own innovation in combining different models (Larsen –Freeman; 2003; Chamot, 2005; Oxford et al, 2007; Oxford, 2011) for teaching and learning grammar gave hints about the usefulness of focusing on strategies, elements of self-regulated learning and three dimensions of form, use and meaning.

However, the results are to be interpreted with caution due to the variables manipulated in the study. The findings concerning the first two questions shed light on the importance of individual and contextual factors, i.e. age and proficiency level. The results suggest that younger and less proficient learners have tended to benefit from GSBI more than older and more proficient learners as far as the immediate effects are concerned. Nevertheless, when it comes to the delayed effects of GSBI, all learners, regardless of their age and

proficiency level, seem to have benefited from the instruction. In other words, the effects of GSBI on learning and using grammar by EFL learners appear to be more noticeable in the long run as the results of the second post-tests across different ages and proficiency levels show.

This is the first attempt to study the effects of moderator variables of age and proficiency level on learner's achievement of grammar through GSBI. Previous studies, according to Chamot (2009: 966), revolved around the identification and description of learning strategies used by language learners through questionnaires like SILL and the correlation of these strategies with other learner variables such as age, proficiency level and soon (e.g. Chamot and EI-Dinary, 1999). The findings suggest that the younger are more successful than the older ones in terms of gaining proficiency and more proficient students tend to make frequent use of a large number of strategies (Takeuchi, Griffiths, and Coyle (2007: 81). The findings of this study, indicating that younger learners can benefit from GSBI more than older ones, are in line with those of several studies which focused on teaching strategies within a language skill other than grammar (Rubin et al., 2007). The framework of SBI followed in this study was based on an explicit, integrated model with a flexible use of both L<sub>1</sub> and L<sub>2</sub> as language of instruction, in which strategies and metastrategies were incorporated for the first time. Preferably, the future attempts should focus on distinct implementation of SBI with different age and proficiency groups, as Macaro (2009) put it.

The present paper was innovative in addressing the delayed effects of GSBI and came with the interesting findings that

grammar strategy instruction is especially useful in the long term, an issue which has never been addressed in the previous studies (Rubin et al, 2007: 115). It is worthy of note that the effects of instruction persisted over time across different ages and proficiency levels as the results of questions three, four and five demonstrate.

## Conclusions and And Implications

The contribution of the present paper was, first of all, the introduction of a GSBI model which combined Chamot's (2005) CALLA model, Oxford's (2011) S<sup>2</sup>R model and Larsen-Freeman's (2003) 3D model of grammar. It drew upon different strategies and metastrategies coming from different sources (i.e. students' self-report, teacher's focus groups, strategy lists, strategy models and grammar textbooks). Future attempts can modify and expand the model to address the differing needs of groups at different ages and proficiency levels. As Macaro (2009, p. 26) emphasized, this is a pressing need since some older and more proficient learners seem resistant to SBI, feel SBI is a waste of time, would rather be getting on with the language learning itself and may be too stuck in their way to want to change. One of the remedies, as he suggests, is to replace product-oriented assessment with process-oriented one which measures improvements in learning how to learn as well as the achievement itself.

Two variables out of socio-affective, individual, cognitive and situational ones were manipulated. However, future attempts can address the other ones notably motivation, learning style, personality type, gender, learner beliefs and aptitude, as these can have main effects on the role of SBI in learner's grammar development and give the researchers a better image to interpret the results.

The contribution of the article in revealing the effectiveness of the treatment in the long run can trigger further studies to investigate the longitudinal effects of strategy instruction which are programmed for longer periods of time and include periodic reminders of the strategies, refresher courses and facilitation of strategy transfer to new tasks as Rubin et al. (2007: 155-156) stressed the issues.

The GSBI model treated in the present paper can be reformulated by using other forms of SBI, i.e. implicit and discrete instruction instead of explicit and integrated one and other combinations of L<sub>1</sub> & L<sub>2</sub> to address the controversy over the options (For more information, see Chamot, 2009, pp. 272-275).

Due to the limitations of educational system, the researcher manipulated the variables in intact classes of high school and university. Other learning contexts like language institutes and independent learning situations and random sampling of the groups can help the researchers to increase the generalizability power of their findings.

The research presented grammar strategy lessons on the basis of the above-mentioned models. This can act as a temptation for language teachers, syllabus writers and material developers to include the elements of self-regulation, strategies and metastrategies as well as three dimensions of form, use and meaning while designing classroom tasks, administering grammar instruction and writing grammar textbooks.

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