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Concept-based Instruction and Teaching English Tense and Aspect to Iranian School Learners

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Abstract

The present study examines the role of Gal'perin's Concept-based Instruction (CBI) as a pedagogical approach in teaching cognitive grammar-based (CG-based) concepts of tense and aspect to EFL students. Following the sociocultural theory of L2 Acquisition (SCT), arming L2 learners with scientific concepts can lead to L2 development by deepening their understanding and raising awareness of L2 structures. To this end, over the course of eight weeks 28 third grade middle school students (14 years old) received the concepts in the CBI framework and 30 third grade middle school students received a traditional type of instruction. There were three sets of data including *definition of the concepts of tense and aspect* before and after CBI, *concept verbalization data during* CBI, *written discourse performance* plus *responses to a set of grammatical questions* before and after CBI. It was found that although both groups improved significantly after receiving the instruction, the students who received CBI performed significantly better than those in the traditional group. The students who received CBI also produced a significant definition of the concepts and their written discourse performance and responses to the grammatical questions improved after CBI. The result provides insight into the application of scientific concepts in L2 instruction.

Keywords: concept-based instruction, explicit rule-based instruction, language development, grammar instruction, cognitive grammar

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INTRODUCTION

The role of formal grammar instruction has long been a contentious issue in the field of second language acquisition (SLA). Nassaji (2017) argues that "nothing in the field of SLA and language pedagogy has been as controversial as the role of grammar teaching and learning"(p. 205). There are pros and cons of teaching grammar in second language (L2) classes. One side of the argument holds that formal grammar instruction will help drive L2 learning and acquisition to its final status, whereas another line of the argument supports the provision of a fully meaning-based condition in which there is zero grammar instruction. One line of the arguments has its root in cognitive psychology; it concerns the distinction between explicit and implicit learning. The former refers to the type of learning in which learners have or gain awareness of the target structure by explicit instruction; however, implicit learning is not the result of conscious study; rather it is learning without awareness.

Ellis (2016) distinguishes between pedagogical and scientific description of grammatical rules. The former refers to providing learners with simplified explanations while the latter gives learners a conceptual understanding of a particular structure. The present study deals with the latter view of grammar instruction which is a new trend in formal grammar instruction from Vygotskyan sociocultural theory (SCT) of L2 development and acquisition. Lantolf and Zhang (2017), as followers of SCT, argue that SCT has wrongly been considered to have no direct implications for instructed L2 development, yet they believe that formal rule-based instruction driven by SCT principles can play a significant role in the development of second language (L2) pedagogy. Such an instruction must be presented through "a complete and conceptual understanding of the object of study" (Lantolf & Thorne 2006, p. 291). Lantolf (2007) points to the shortcomings of other explicit rule-based instruction and refer to them as 'rule of thumb' approaches which usually suffer from inaccurate timing of explanations, piecemeal teaching of structures, and an inacceptable quality. Although the previous explicit instructions are not totally dismissed, rule of thumb approaches "generally describe concrete empirical occurrences of the relevant phenomenon in a fairly unsystematic fashion and, as a result, fail to reveal deeper systematic principles" (Lantolf, 2007, p. 36).

As long as there is an emphasis on direct grammar instruction especially in EFL contexts, such as the one in the current study, the need for an optimal way of instruction still exists. Research has shown that although there have been changes in school textbooks, EFL teachers keep on utilizing direct grammar instruction which is mostly pedagogical descriptions or the so-called rule-of-thumb approach (Azizifar, Koosha, & Lotfi, 2010; Razmjoo & Riazi, 2006). Therefore, it is of utmost importance to try other ways of direct grammar instruction especially the ones that are theoretically grounded, such as CBI whose efficacy is put into test in the current study.

SCT-driven instruction is believed to impart sophisticated explicit knowledge, or 'highly structured knowledge' as Lantolf (2007) puts it. This is what Vygotsky (1986) refers to as scientific concepts which should be the main focus of education. This type of knowledge stands in contrast to spontaneous concepts which are the result of the gradually empirical knowledge processed via discovery learning. According to SCT, scientific knowledge in itself is not considered to be enough for learners to speak a second or foreign language, so they do not refute the significance of spontaneous or implicit knowledge. In this regard, one pedagogical framework that puts theoretical notions of concept formation into practice is Gal'perin's (1902-1988) concept-based instruction (CBI). Against this backdrop, the present study sought to examine the role of CBI as a pedagogical approach in teaching cognitive grammar-based (CG-based) concepts of tense and aspect to EFL students.

LITERATURE REVIEW

Over the past two decades, researchers (Frazier, 2013; Negueruela, 2003; Swain, Lapkin, Knouzi, Suzuki, & Brooks, 2009; van Compernolle, 2012; van Compernolle & Henery, 2014; van Compernolle & Williams, 2012) embarked on examining the role of CBI in L2 development. These studies support the use of CBI in L2 language classes.

CBI is claimed to be an appropriate pedagogical framework for achieving an optimal L2 instruction. It is believed to compensate for lack of any systematicity and to holistically present linguistic forms and features in fully scientific and theoretical concepts. CBI offers a systematic and motivated approach to pave the way for triggering

development. Through this SCT-driven pedagogical framework, students can internalize conceptual knowledge which is manifested in material or object-related actions.

Gal'perin's CBI is in line with Vygotsky's view of internalization of concepts via mediated social interaction (Vygotsky, 1978) and Leontev's view of internalization of "external object-related meaningful activity into internal, mental forms of activity" (Arievitch & vav der Veer, 1995, p. 114). Internalization, a core concept of SCT, is defined as "the internal reconstruction of an external operation" (Vygotsky, 1978, p. 56). Internalization is not just a sort of movement from one form to another as this may lead to Cartesian Dualism which Vygotsky and his followers opposed and avoided. Rather, according to Leont'ev (1978), internalization is "the process in which this internal plane is formed" (p. 163). One key concept that serves an important function in this process of internalization of scientific concept is mediation. According to SCT, human beings share certain biological abilities like memory, attention, and reflexes. It is believed that it is the dialectical interaction of such "capacities with culturally created forms of mediation that give rise to specifically human forms of consciousness, whereby humans develop the ability to control their mental processes as a result of participating in culturally mediated activities" (Lantolf & Zhang, 2017, p. 148). Accordingly, the systematically designed instruction and conceptual knowledge are the two main factors that make a difference between scientific concepts and spontaneous concepts.

It was first Gal'perin who proposed a pedagogical framework in line with Vygotsky's view of the role of speech in higher mental development and Leont'ev's emphasis on the impact of external object–related activity in generating mental processes. Gal'perin tried to "capture internalization into specific stages that can be used as a technology of instruction" (Negueruela, 2003, p. 88). Two distinctive parameters were adopted to categorize each concrete form of an action: the level of abstraction of an action and the quality of an action. Regarding quality, *generalization* (the degree of separation between essential and non-essential properties of a performance), *abbreviation* (once an action develops, the number of operations is decreased or 'telescoped'), and *mastery* (how much an action can be

carried out with ease and rate) are important. In terms of abstraction of an action, four basic levels including the materialized, the perceptual, the verbal and the mental must be taken into account. Both the level of abstraction and the quality of an action work in unity to provide information about the relevant aspects of an action and to pave the way for analyzing the structure of an action with respect to its objects and intended goal (Haenen, 2001). Gal'perin (1969) argued that:

> the abbreviation of an operation and its transfer to the position of a 'provisionally performed' operation does not mean the transition of this operation to the mental plane. On the mental plane the abbreviated operations are only presumed, not executed. (p. 257)

According to Gal'perin, certain stages predisposed to be modified based on the context, task type, and even teachers' experience, are essential for an action to become fully mental. Originally, the stages are as follows. *The orientation stage* is 'tomorrow's knowledge' and actions learners are to internalize. Along with *materialization* through which the orienting basis is visually presented as a model, graph, or diagram, orientation aims to awaken learners' learning motive. The next stage is performed through some overt speech using the presented materials. This *verbal* stage is supposed to be an intermediate stage for the learners to get to the *mental* stage. Then, it is time to free the learners from the materialization tools like diagrams, tables, charts or graphs. At the *mental* level, the action is exclusively performed internally ('in the head') and both external objects and audible speech are unnecessary (Haenen, 2001). According to Gal'perin (1957), the learner "just knows that's how it is" (p. 221). The action now in its pure thought form is abbreviated, generalized and mastered. The stages are supposed to be a road map for learners to operationalize an action, to internalize it and to turn it into a mental one. The mental version of an action is expected to result in cognitive development.

Negueruela (2003) applied CBI to teach Spanish tense, aspect and modality 12 English speaking intermediate level college students over 16 weeks. The concepts were presented through a flow chart which served the role of a mediational tool to assist students in deciding which Spanish verbal aspect (preterit or imperfect) to use. A much satisfying result was gained despite certain differences related to the path and pace of L2 development for different learners.

Likewise, Serrano-Lopez and Poehner (2008) taught L1 English speakers the grammatical category of Spanish locative prepositions via CBI. Through 3-D clay modeling, students showed improvement regarding the acquisition of locative prepositions.

Swain et al. (2009) specifically focused on the role of languaging or verbalization in helping learners internalize the grammatical concept of passive voice in French. The result of their study was also in line with the previous ones. The result of their study showed that students who had more verbalization were more successful in internalizing the grammatical concept of voice in French. They argue that languaging is a key factor in the internalizing the L2 grammatical concepts.

Regarding the use of CBI to promote learners' sociolinguistic and pragmatic competence, in a series of study, van Compernolle (2012), van Compernolle and Henery (2014), and van Compernolle and Williams (2012) found it to be effective. Van Compernolle (2011) traced the development of one L1 English learner's socio-pragmatic knowledge of second-person pronouns in French. The treatment was a one-hour tutorial of CBI from the researcher. The researcher explained the grammatical concept using cards illustrating the context and social relationships for the two second-person pronouns. The analysis showed a movement from experience-based and rule-based to concept-based in the participant's explanations. The verbalization data indicated that the student's conceptualization of the address forms was changed by explaining and appropriating the grammatical concepts presented on the cards. Also, van Compernolle and Henery (2014) taught pragmatic knowledge of French second-person pronoun system (i.e., *tu* versus *vous)* to 13 university students. Learners were taught to appropriate the concepts of self-presentation, social distance, and power with respect to the French second-person pronoun system (i.e., *tu* versus *vous*). It was shown that students gained a better understanding of *tu* and *vous.*

Frazier (2013) studied the impact of CBI on six heritage language learners' awareness, control and internalization of the concept of Spanish Modality. More progress in students' written performance and evidence of higher awareness of interrelated categories of modality were found in students' language productions. Students' conceptual understanding took a journey from perceptual to semantic.

In a more recent study, Lavasani and Birjandi (2015) applied CBI to teach listening concepts to 60 undergraduate EFL students over 13 weeks. Students who experienced verbalization in oral and written forms outperformed those in the other groups.

To recap, the result of research on the effectiveness of CBI shows that it has helped learners gain a deeper understanding of the related or taught concepts. Still, it has been shown that learners' real life performance has not significantly changed after receiving the scientific concepts, although the quality of their conceptual understanding improved. One important discovery from CBI studies has been the interference of the learners' previous knowledge of the related structure(s) (Frazier, 2013; Garcia, 2013; Negueruela, 2003). Therefore, it is not out of place to examine the efficacy of CBI from the early stages of L2 education.

PURPOSE OF THE STUDY

According to the review of literature reported in the previous section, the CBI-related studies have all benefited from various mediational tools to present the content of the treatment to their study participants and they were all successful. In this regard, the current study exploits a very strong conceptual orientation from findings of cognitive grammar (CG) in the pedagogical framework introduced by Gal'perin in his CBI to teach English grammatical points to teenager EFL learners with low language proficiency. Unlike the above studies, there is also another group of participants, referred to as traditional group, who receives the usual type of instruction in the current context.

One of the heaviest burdens on L2 learners' shoulders is to learn the temporal system of the target language (Bardovi-Harlig, 2000). It has long been a customary procedure to break down the parts of an L2 and present them to learners in a piecemeal fashion on different occasions. The main reason behind this has been the complexity of the grammatical points and categories, interestingly the categories of tense and aspect. This has led into much inconsistency in the presentation of grammatical points and possible concepts (Lai, 2012). It might be due to the lack of a thorough meaningful presentation of the grammatical materials especially English temporality that students both at elementary and advanced levels have problems with what is traditionally known as tenses, such as simple present, present

continuous and so on. Learners in EFL contexts are not given a thorough meaningful account of English temporal system. They are generally presented the structure of the tenses and a short description of their application as this is the case in the English textbooks of Iranian schools. Each unit gives a small piece of a grammatical category and it is usually up to teachers to come up with a good definition and explanation for a particular structure. The current study aims to examine the presentation of a thorough and meaningful conceptual understanding of English tense and aspect to early teenagers in a middle school in which presentation of such categories takes place in a piecemeal fashion. The performance of the learners who receive CBI will be compared with that of the learners from another class which receive the current instruction here referred to as traditional instruction.

Primarily, CBI is about providing students with conceptual knowledge; thus, language theories like cognitive linguistics, cognitive grammar, systemic functional linguistics, are favored by CBI, for they specifically focus on the meaning that forms of a language convey. It should be noted that the treatment for the current study is a replication of Bielak and Pawlak's (2013) study, which is based on the findings and descriptions of CG; however, Bielak and Pawlak did not apply CBI to teach the CG-based concepts of English tense and aspect. The present study was carried out to find answers to the following questions:

1. Does the CBI implemented in this study help learners deepen their understanding of the grammatical concepts of tense and aspect in English?
2. Does the CBI implemented in this study help learners improve in the use of English tense/aspect and perform better than those who receive the traditional type of instruction?

METHOD

Participants

According to the new education system, after sixth grade in Elementary school, students go to middle school to pass grades seven, eight and nine. Students start studying English from grade seven. The participants of the study were conveniently selected from ninth grade,

so this means that this is the third year of studying English at school. Still, it was found through Biographical and language survey that all of them attended private language institutes when they started their elementary school and studied conversation books for teenagers, such as *Let's Go* series (Nakata, Frazier, Hoskins, & Wilkinson, 2012). In addition, at level nine tenses like simple present, present continuous, and simple past are included in their textbooks.

It might be argued that the students at this level are not cognitively ready to receive complex conceptual knowledge, yet Vygotsky (1986) suggests that cognitive development is the result of the internalization of language and that concepts presented as a whole will make the difference in the process of development. One main argument of SCT and CBI is that the concepts must be delivered to students in a holistic way without simplifying the content since simplification may result in inconsistency and rule-of-thumb (Lantolf, 2007). In addition, as also pointed out earlier, the result of the previous CBI-based studies showed that internalization of concepts after reaching intermediate levels is rather difficult and students' previous knowledge interferes with the new concepts. Therefore, we argue that these students should receive coherent and complete conceptual explanations for the sake of their cognitive development. In the meantime, as explained in the treatment section, the use of diagram, an example table, PowerPoint, and verbalization activities were supposed to pave the way for the internalization of the concepts while the teacher also used Persian to make sure that students understood the concepts.

There were two ninth grade classes in the selected middle school and different teachers for each class. The two teachers and 58 male students agreed to participate in the study. The result of oxford placement test showed the average mean score of 18 (16 to 22) showing that they can be put in level A1. According to their biographical and language survey, none of them had ever lived overseas.

The English class is held once a week for the whole school year and there were two classes and two teachers for each class in the related school. One of the teachers, Mr. Kia with 27 years of experience agreed to give the CBI treatment to his class (n = 28). Since he was not familiar with the CG-based grammatical concepts

and the sub-concepts, the necessary materials and instruction were given to him and it was made sure that he would follow the program by a pre-class demo and by observing his class. The other class, the traditional group, received no CBI (n = 30) and was taught by the second teacher. The second class is considered as the traditional class or group. Detail of how the material was delivered to students is given in a separate section bellow.

Instrumentation

There were different sets of data including *learners' definition of the concept of tense and aspect* before and after CBI, *verbalization data, written discourse performance data* plus *Multiple-choice and short answer questions* before and after CBI.

Questions for definition data were about students' understanding of the CG-based concepts and the related subconcepts. The questions were taken and adapted from Gánem-Gutiérrez and Harun's study (2011). *Written discourse performance data* was collected through three writing topics before and after STI. The topics were supposed to elicit narratives that could potentially promote the relevant structures including simple present, present continuous, simple past, etc. They were mainly adapted from *American English File* series (Latham-Koening, Oxenden, & Seligson (2013); they asked for what they usually do during New Year holiday, one of their favorite vacations and what their family member are doing at the moment. Two university lecturers and the teachers of the two classes (Traditional and Experimental groups) confirmed the content validity of the topics. Content validity means the representativeness of the sample of items in measurement devices (Martella, Nelson & Marchand-Martella, 1999). Human judgment is enough to secure the content validity of a performance test or topic (Popham, 2000). Meanwhile, two raters scored students' writings before and after the treatments and there was a high degree of inter-rater reliability, %95.

Multiple-choice and short answer questions (No=32) were adapted from *Grammar in Use* series (Murphy, 2012) and were used for pre- and post-test. There were three sets of written verbalization activities from *in Use* series. It was not possible to have oral verbalization due to lack of electronic devices for all the students; therefore, students were instructed to complete the questions and

write their explanations for their choices while using the definitions, diagrams and illustrations given to them during the treatment. It should be noted that the traditional group answered the questions for the pre-test and posttest as well as written discourse questions.

Data Collection Procedure

Cognitive Treatment of English Tense and Aspect

The treatment for the CBI group was based on the findings of Cognitive Grammar (CG) put forward by Langacker (2013). CG views present/past simple or present/past continuous in traditional grammar pedagogy as tense/aspect pairings in English. As the initial phase of the instruction, the grammatical concepts of tense, lexical aspect, and grammatical aspect were separately oriented to students under an umbrella concept, i.e., voice, through a diagram (Figure 1).

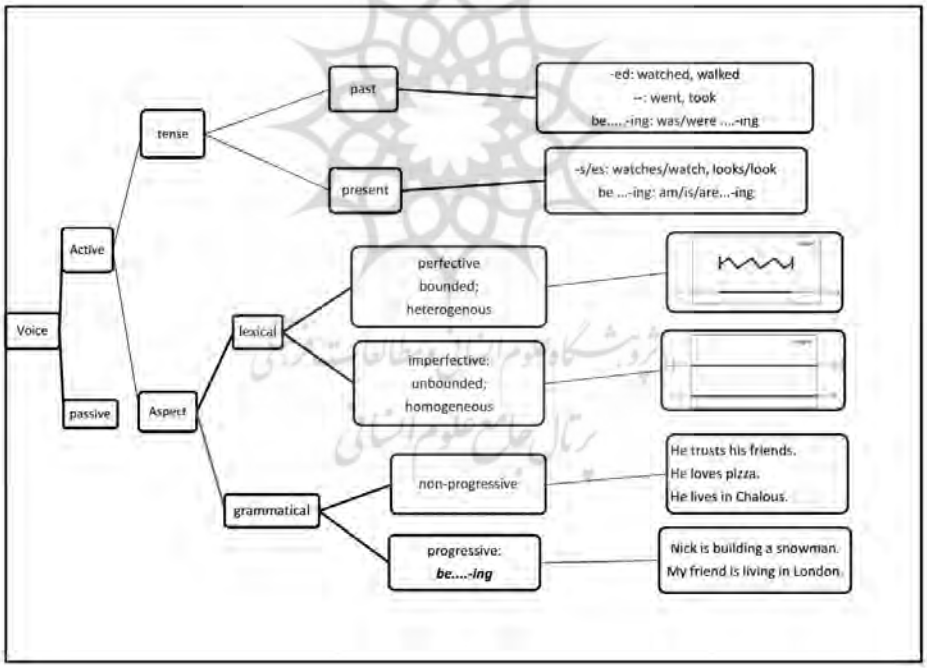

Figure 1: The scheme of a complete orienting basis of an action (SCOBA)

According to Gal'perin, the theoretical or scientific knowledge must be presented to learners as a 'meaningful whole', showing the picture of the whole pieces of future knowledge. This is referred to as the Scheme of a Complete Orienting Basis of an Action (SCOBA) in comparison to students' Orienting Basis of an Action (OBA). OBA is what the students have in and within themselves and what their present orienting basis is (Haenen, 1996). "An OBA does not ensure correct execution, whereas a SCOBA does" (Haenen, 2001, p. 162). In the meantime, the students were told that they would be taught the active voice and passive voice would be dealt afterwards, while the latter was not part of this study.

The related CG-based concepts, such as inherent expansibility/contractibility, homogeneity and heterogeneity, temporal boundedness and unboundedness, which are designated by verbs, were presented through slides in a PowerPoint (as attached in the following paragraphs). The content of the slides was basically adapted from Bielak and Pawlak (2013). Similarly, students were given sample sentences of verbs of different types. There were three sets of verbs one of which was related to verbs referring to actions (e.g. repair, cook, clean) and states (e.g. know, believe). The second group of verbs (e.g. have, taste, smell) had different meanings when used in simple present and present continuous. The last set of verbs is used when we talk about a situation taking place at speech time (e.g. promise, suggest). As to the PowerPoint, certain changes were made to the original slides by Bielak and Pawlak (2013). First, different verbs and examples had to be used due to some cultural preferences and students' language ability. Then, the slides had to go through certain pictorial changes due to the use of different verbs. Meanwhile, using the CG-based concepts the iterative meaning of verbs, such as *live*, was included in the instruction and homework activities.

In brief, the first slide (Figure 1) introduces the concept of aspect and its sub-concepts; the next two slides display the features of perfective and imperfective verbs with sample verbs. In slide 2 (Figure 2) students were told that verbs are divided into perfectives and imperfectives, and perfective processes typically refer to the changeability of the components of the process, meaning that there is a beginning and an end point to the action; that is, the process is bounded within a temporal scope. Therefore, perfective verbs show

heterogeneity and boundedness in time. As Figure 2 shows, the zigzag line illustrates the changeability of the perfective verbs and the vertical bars show the process is bounded in time unlike imperfective processes. The bold line underneath on the time arrow depicts the length of the process through conceived time.

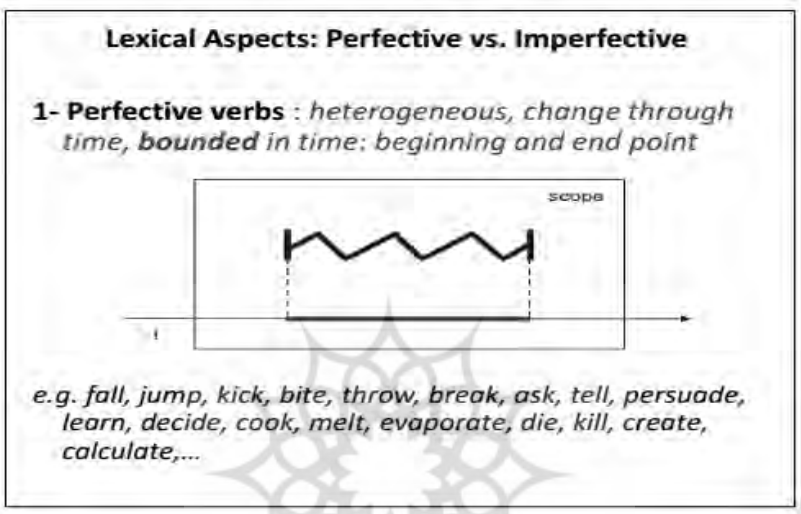

Figure 2: Features of perfective verbs

In slide 3 (Figure 3), the inherent characteristics of imperfective verbs were displayed. According to the straight line, the action is construed as homogeneous and beginning and the end point of the action is not essential so it is dotted. That is, it is inherently unbounded and it is characterized by inherent expansibilty/contractibilty. Students were told that the dotted part at the two ends of the line shows that the beginning and the end point of the action are not essential. Slide 4 refers to a keyhole method proposed by Niemeier (2005, cited in Bielak & Pawlak, 2013) to inculcate the idea that the present tense just depicts a short part of an action (1 to 2 seconds).

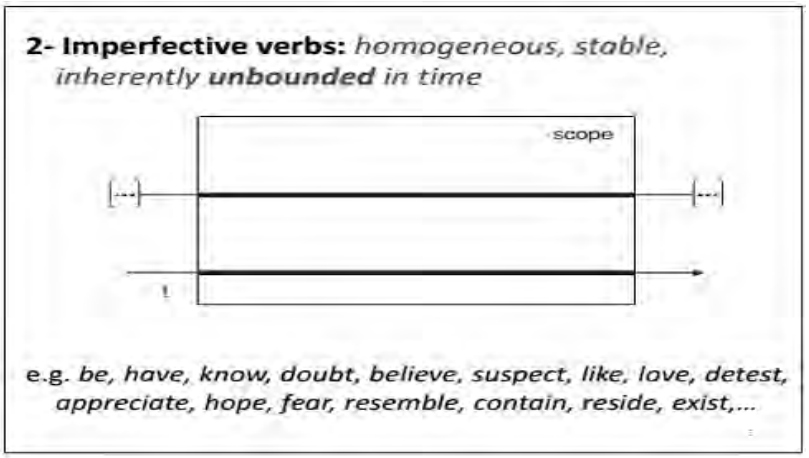

Figure 3: Features of imperfective verbs

Slides 5 and 6 (Figure 4) were designed to further elaborate on the concept of homogeneity and by using the verb '*believe'*. Students were asked whether the sentence '*Min-ho believed in God'* could be applied to every second of a full day of Min-ho's life or not and whether it was possible to use the progressive form. The teacher helped students to use the information from previous slides and to come to grips with the concepts.

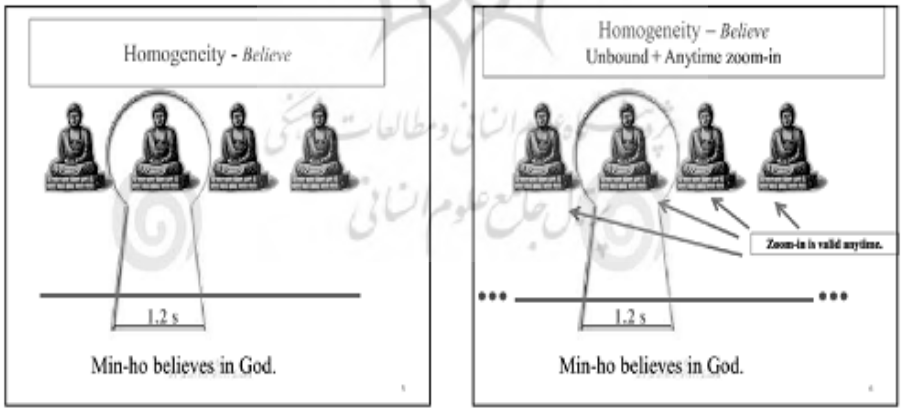

Figure 4: Exemplifying the concepts of homogeneity and unboundedness

This was done for the concept of heterogeneity in slides 7 and 8. In slide 7, students' attention was directed to use of the non-progressive form of the verb 'make'. When the two sentences (*They are making a*

snowman. They made a snowman.) appeared on the screen, students were asked when one can use the sentence '*They made a snowman'*, in the beginning, in the middle, or at the end of the action. Then, the arrows appeared to verify or reject their hunches. They were told to reach a conclusion as to the features that the *be…-ing* form carries along. This was depicted in slide 9 reproduced in Figure 6.

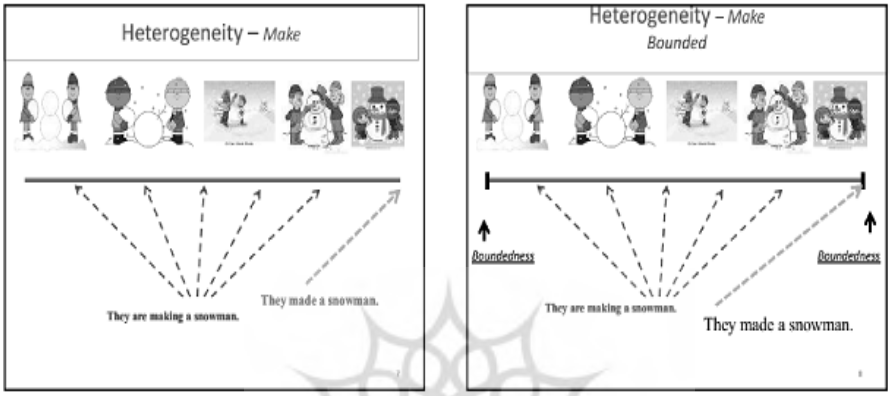

Figure 5: Exemplifying the concepts of heterogeneity and boundedness

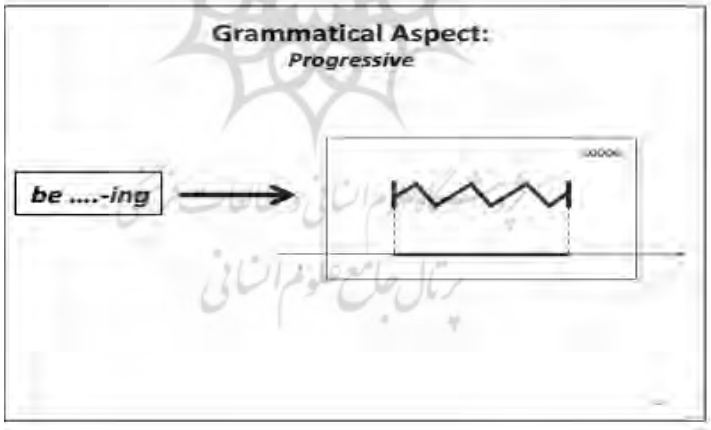

Figure 6: The inherent quality of *be…ing*

These concepts were applied to help learners understand the verbs that show some habitual behaviors. In slides 10 and 11 (Figure 7), students were told that some verbs, such as *live*, must be put in non-progressive form, as they refer to iterative or habitual processes.

Since there is no changeability in their use, they speak of homogeneity. Meanwhile, in the iterative sense, the beginning and the end point of the action are non-essential (Figure 8).

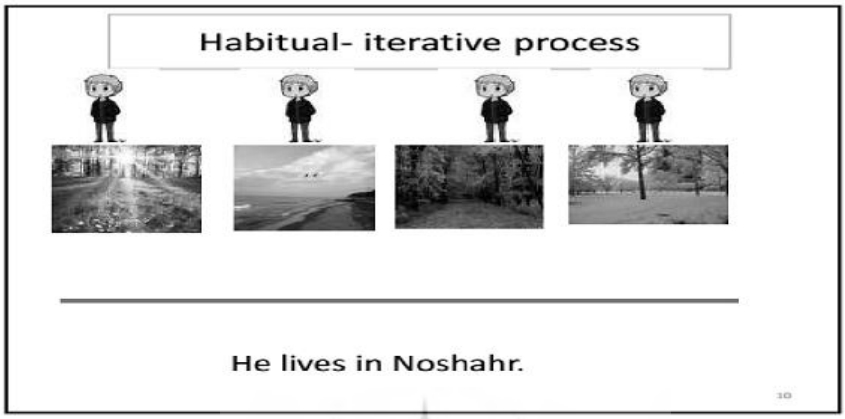

Figure 7: Exemplifying the iterative feature of verbs along with homogeneity

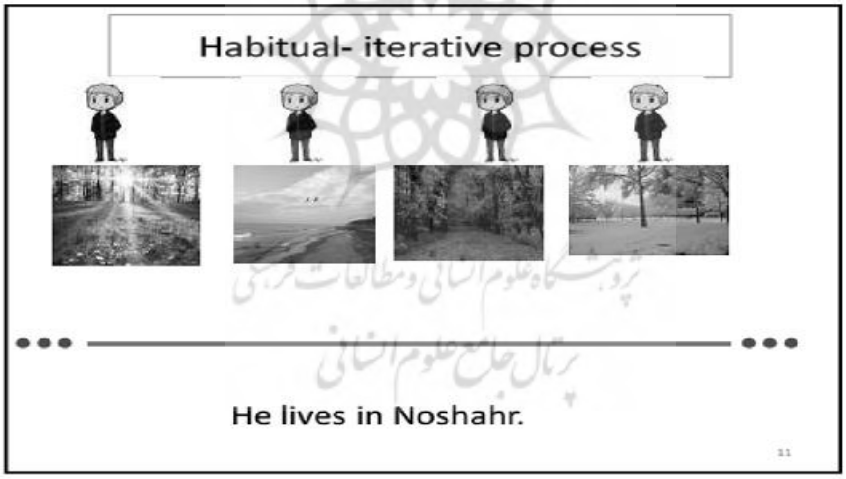

Figure 8: Exemplifying the iterative feature of verbs along with unboundedness

Then, they were told to complete some activities at home on three occasions along with verbalization and explanation of the reasons behind any linguistic decisions. The activities were adapted from *Grammar in Use* series as mentioned earlier. This formed the concept

verbalization data, which was in the written format because a lot of students mentioned in the beginning that they were not able to record their voices. They were instructed to verbalize their thoughts regarding the answer to the questions by referring to the treatment materials including the diagram, definitions, and PowerPoint.

Treatment for the traditional group

One of the researchers observed the sessions related to the teaching of the present and simple past and present/past continuous to the students in the traditional group. In a word, the traditional group received a kind of deductive instruction. The teacher started with the general appearance of the present tenses and subject-verb agreement through some tables from their textbook. The tables for the tenses were about the agreement between subjects/subject pronouns and verb, the addition of the –ed (plus irregular form), *-s* and *-es*, and different forms of *be…-ing*. Later, the usage of the tense was presented shortly with some examples. The presentation of each tense took less than an hour in general.

Next, students received the handouts which included the set of verbs, as well as the homework activities without any sign of CG concepts. Then some verbs in terms of signals showing present/past simple and present/past continuous were given to the students. For the following sessions students were told to do the homework activities and the activities in their textbook. The same activities were completed by the experimental group (CBI group) except that the experimental group followed the CBI instruction explained above.

Data Analysis

The first tenet of the stepwise procedure in CBI is to determine the unit of instruction which is tense/aspect pairing. So for the current study the unit of instruction is the unit of analysis. The analysis of definition and verbalization data follows Negueruela (2003) and Frazier (2013) with small changes in the definition of functional and functionality features. Students' concept definitions before and after CBI were classified according to the following features:

1. *Generality* (*Semantic* definitions directly refer to conveying meaning. *Functional* definitions consist of learners' past

learning experiences or their reasons for using a particular structure. *Perceptual* definitions include reasons based on direct personal experience with the language.)

2. *Abstractness* (essential features of the definition are present)
3. *Systematicity* (Students provide a coherent definition and inter-concept relations are visible)
4. *Explicability* (whether students can define the concept, which can be used for determining their awareness)
5. *Functionality* (it can orient discourse and it shows it can be executed)
6. *Significance* (provides a meaning-making ability)

The first three features are the core features of a theoretical concept and are interrelated. Abstractness is satisfied if it has features necessary for theoretical concepts. 'The essential components of a theoretical concept rely in its high generality, abstractness and systematicity' (Frazier, 2013, p. 132). Abstractness and systematicity are considered to be interrelated with functionality; that is, for a definition to achieve functionality, it must show at least some level of abstractness and systematicity, then it can be said the definition can orient activity (Negueruela, 2003). Negueruela contends that when a definition can show functionality, it can be said the student has the potential to apply the concept in execution. Functionality is about the potential of a definition to be re-contextualized while significance shows students' intention for the use of a particular structure (Frazier, 2013, pp. 116-117). Explicability refers to the first three features and is related to students' awareness of the concepts. Table 1 provides a clearer picture of the values for the analysis.

Table 1: Values for the analysis of definition data

1- **Generality**: a. semantic: Meaning-based definitions b. functional: Use-based definition c. perceptual	
2- **Abstractness** (essential features included)	Yes: definition has all the orienting features No: Some: some of the features are present Some: Some of the features are present
3- **Systematicity**	Yes: There is coherence No: There is no coherence Some: there are some coherence

4- **Explicability**	Yes: There is awareness of the features No: There is no awareness of the features Some: There is some awareness
5- **Functionality** the feature of **abstractness and systematicity**	Yes: There is an answer of Yes or Some under No: There is no orientation and definition cannot be re-contextualized
6- **Significance**	Yes: There is understanding of the role of speaker intentionality or agency No: There is no understanding of the role of speaker intentionality or agency

Finally, for the second question, both an independent-samples t-test and a paired-samples t-test were applied to compare students' performance on the pre-test and the posttest. The independent-samples t-test was run to compare and contrast the two groups while the paired-samples t-test was conducted to check the possible changes in students' performance in each group after receiving the related treatment. Students' written discourse from the two occasions (before and after CBI) was analyzed via frequency analysis approach. The number of times each structure was used appropriately and inappropriately was counted before and after the cognitive treatment.

RESULTS

The analysis of the definitions of the concepts showed that CBI deepened students' understanding of the grammatical concepts and sub-concepts of CG-based tense and aspect while students had no scientific definition of the concepts before receiving CBI. As it was expected (Table 2), all of the students provided traditional definitions of the tenses (simple present, present continuous, simple past,…) in very short lines, such as *simple present is used for actions that happen every day or present continuous is used when something is happening right now.* None of the students provided any definition regarding the qualities of verbs or the concepts under study on the pre-test as they were not expected to do so, so the column for Time one is filled with dashes (---). However, After CBI, CG-based definitions appeared in students' definitions which were mostly

semantic and/or functional. Students' definitions may shed more light on the analysis of the features available in their definitions.

Table 2: Analysis of definition data

No. of students = 28	Time 1	Time 2
1- Generality: a. semantic b. functional c. perceptual	----	Functional = 28 Semantic = 28
2- Abstractness (essential features included)	----	Yes = 24 Some = 4
3- Systematicity	----	Yes = 22 Some = 6
4- Explicability	----	Yes = 25 Some = 3
5- Functionality	----	Yes = 18 Some = 10
6- Significance	----	Yes = 28

For example, **Student # 5** wrote

..بچه‌یزی.کگذشد.در.ه‌تا .ه‌تفاق.افتادبا.که.ه.ed شانن.مه دهیم.ی.چ.یا.ویزی.ز.درماحا.ن.ل‘ . tense’

[Tense is about something happened in the past, which we show by –ed, or something in the present'.]

Although his comments, similar to other students in the study, are short, it has the features for being considered general and systematic. He added:

’Aspect. بدسه.دو.ه‌ته.تقسد شود.می‌یم ..لی‌وغ.و.گرامری ..بعضا.ی‌ف.زعها.ل.ذاتا.تغییر. پذی‌ردند.و.بعضها.ی.نیستند ..با.توجه.با.ه‌ین.موضومی.ع.تواالسن.تمری‌را.درک.و. ing–.. یعکار.ای‌ن.ی.پایان.دارد.‘ .

[Aspect is divided into two groups: lexical and grammatical. Some verbs inherently change and some do not. Considering this issue, a verb can be made progressive and -ing means that the action has an ending point.]

The student knows that the lexical features of verbs play a significant role in attracting or rejecting *be……-ing* structure. Meanwhile, He is also aware of the function that –ing plays. The

student indirectly talked about the feature of boundedness that adding *be….-ing* gives to the verb structure.

Student # 9 noted that.verbs are the decision-makers in their own structure.

’یا.ها.فعل. perfective .سهتند.یا.و. imperfective.آوناه.تصمه میبم.گیرند.که. ing.
بگیربا.دذ.نگیرند ..قتیو. ing- گذ.میارز.بازه.یمهانی.برآا.ین.در.نمی.ظر.گیریم.یعنی.به.
شندنومی.ه.گیوشر.موع.وپایاکار.این.ن.مها.مست ..حا.پس.اسدل.تمرار هم.ی.بز.هماحا.ن.ل.
مربوهم.و.شود.می.ط.با.هیتککار.ه.ماد.آ.ریدنه.خ.تمامواهشد.د.‘ …
[Verbs are perfective or imperfective and they decide whether they get –ing or not. When we add –ing (to a verb), we consider boundedness. That is, we tell an interlocutor that the beginning and the endpoint of the action is essential..Therefore, present continuous is both related to the present tense and point to the fact that our action will end in future.]

Generality and systematicity are present in this mostly semantic definition. The student indirectly gives out the meaning of changeability by mentioning the dichotomy of perfective/imperfective verbs and also points to the sub-concept of boundedness. However, this is a little bit different from the fact that speakers finally make that decision given the inherent lexical aspect of a verb. It shows that the student is now aware that verbs have certain features playing a significant role in attracting or rejecting *be…..-ing* structure. It should be noted that there is no sign of agency in this student’s definitions as this is the case in other definitions.

Student # 22 provided semantic and functional definitions through these lines:

’ tense زماا.ن‌نجام.کاری.را.شنمی.ان.د.ده ..برگذشد.ای‌ته.از. ed–.شد.وبی.کل‌قا.عده.و.
براز.یماحا.ن.ل. es/-s–..یا.و. am/is/are.استفادمی.ه.کیمد. aspect.با. lexical.اسیا.ت.
grammatical..بعضی.از.افعال. perfective.و.بعضها.ی. imperfective. .سهتند..–
ing.با. perfective.لمی.د.ی..قتیو. ing–.داریم.یعنیی.ز.بازه.کمانی.برا.ا.ی.کار.جام.در.
نمی.ظر.گیریم . افعخا.یا.ال‌صیت.تغییرپذیری.د.اریا.دذ.بطور.کلی.تغییر.می.ذ.کدنند.یعنی.
expansibility..دنارند.مثلاافعل. know الاهی‌نلاتوبالایملا ing لاکبرلاهلابریم.‘ ..
[Tense shows the time of doing an action. For past we use –ed and the irregular form and for present we use –s/-es or am/is/are. Aspect is either lexical or grammatical. Some verbs are perfective and some are imperfective. –ing comes with perfective. When we have –ing, it

means we consider a bounded period of time. Verbs either has changeable feature or cannot change generally meaning that they don't have expansibility. For example, we can't use the verb 'know' with –ing.]

Similar to the previous one, this definition also has signs of generality, systematicity and abstractness. It is also mostly semantic in that the student gives the combination of lexical and grammatical aspects although it sounds a little vague in appearance. He also points out the meaning that a progressive structure can convey. He elaborates on the inherent meaning of lexical aspect and the categorization of perfective and imperfective verbs. His ability and awareness of the relevant concepts shows the feature of expansibility. Nevertheless, like all other students, there is nothing from learners' personal experience in this regard.

Analysis of Essential Features

High generality, abstractness and systematicity must be satisfied for a concept to be theoretical. When a definition is coherent and interrelated and when it has the essential feature(s) (abstractness); then it is potentially viable to orient activity (functionality) (Frazier, 2013).

The result shows that all the concept definitions are general (mostly semantic and functional) and systematic since it has coherence and the given sub-concepts are interrelated. Students also showed acceptable awareness to elaborate on the concepts. These add up to the significance of their definition. This means that the definitions have the potential to be executed. Students did not refer to any personal experience of the use of the related concepts. They did not resort to signals like adverbs of frequency for choosing a particular structure (Table 3).

Table 3: Essential features in theoretical concepts for all students

	Time 1		Time 2			
Students	G	F	G	F		
1	---	---	S/F	Y		
2	---	---	S/F	Y		
3	---	---	S/F	Y		
4	----	---	S/F	Y		
5	----	----	S/F	Y		
6	----	----	F	Y		
7	----	----	S/F	Y		
8	----	----	S/F	Y		
9	----	----	S/F	Y		
10	----	----	S/f	Y		
11	----	----	S/F	Y		
12	----	----	S/F	Y		
13	----	----	S/F	Y		
14	----	----	S/F	Y		
15	-----	-----	S/F	Y		
16	-----	-----	F	Y		
17	-----	-----	F	Y		
18	-----	-----	S/F	Y		
19	-----	-----	F	Y		
20	-----	-----	S/F	Y		
21	-----	-----	S/F	Y		
22	-----	-----	S/F	Y		
23	-----	-----	S/F	Y		
24	-----	-----	S/F	Y		
25	-----	-----	F	Y		
26	-----	-----	F	Y		
27	-----	-----	S/F	Y		
28	-----	-----	S/F	Y		
Total			S/F = 22		F = 6	F = 28

Generality: Semantic (S), Functional (F), Perceptual (P)
Functionality: Yes (Y), No (N), Not provided (----)

Analysis of Students' Verbalization Data

More than half of the students produced very little and gave short explanations for their choices in homework one. However, for the second and the third homework activities they started to elaborate more on their choices. For the analysis of their verbalization data the same set of criteria for definition data analysis was applied here (Table 4).

Table 4: Analysis of verbalization data

No. of students = 28			Homework 1	Homework 2 Homework 3
1- Generality			S=10	S=13 S=18
a. Semantic (S)			F=11	F=16 F=23
b. Functional (F)			P=0	P=1 P=1
c. Perceptual (P)				
2-Abstractness (essential features included)			Y=5	Y=10 Y=12
Yes (Y)	Some (S)	No (N)	S=6	S=8 S=16
			N=0	N=0 N=0
3-Systematicity	Yes (Y)	No (N)	Y=11	Y=19 Y=23
			N=6	N=4 N=5
4-Explicability	Yes (Y)	No (N)	Y=5	Y=6 Y=15
			N=6	N=17 N=13
5-Functionality	Yes (Y)	No (N)	Y=11	Y=12 Y=19
			N=0	N=16 N=9
6-Significance	Yes (Y)	No (N)	Y=0	Y=13 Y=22
			N=11	N=15 N=6

All of the students gave short written explanations on the second and the third occasion. It can be seen from looking at the written verbalizations from the three occasions that the quality as well as the quantity of their reasoning changed to a great extent. The feature of generality improved on the third occasion. There was no trace of the feature of perception in students' verbalization data. Abstraction as an important feature in conceptual thinking also improved on the second and the third occasion. The analysis shows that the rate of semanticity and functionality in students' verbalization gradually increased. Therefore, this worded knowledge can be said to have the potential to

surface in students' future language use. The pressing issue here is to know about the inherent characteristics of verbs. Students' inability to put the verbs in their right category is the main reason behind their false choices.

In completing the first verbalization task, **Student # 8** considered 'want' and 'think' as imperfective verbs and made the right decision, whereas he made a mistake in putting 'shake' in the imperfective category. Even after receiving teacher' feedback, upon completion of the next verbalization tasks he made the same mistakes and wrongfully grouped some verbs in perfective and imperfective categories.

He made right decisions for verbs like 'know', 'understand'. He wrote about the inherent characteristic of the verb 'know' in that his ability to recognize his friends will stay in his mind forever:

اینکه.کسی.ر.کسی‌وبشاسنه.قرار.نیست.موقف.پس.باشه.تی‌عل. know.تغییرپذیر.نیست.
imperfective..محسبو.می.شه.و.نباید.ing.بگیره...

[That someone knows somebody is not going to be temporary, so the verb 'know' is not changeable and it is considered as imperfective and should not get –ing.]

The student is now aware of the inherent characteristics of the verb 'know' and can apply this knowledge by saying that this verb cannot be used in progressive aspect.

Quantitative Analysis

The Kolmogorov-Smirnov results were obtained and it showed the normality assumption is verified for both the pre-test scores (Experimental = 1.17) (Traditional = 1.46) and the posttest scores (Experimental = .72) (Traditional = 1.57)

The result of the independent-samples t-test (Table 5) showed that the two groups did not differ significantly on the pre-test (Experimental group: M = 14.32, SD = 1.15; Traditional group: M = 14.36, SD = 1.42; t = .132, p = .89, df = 56); however, there was a significant difference for the students in the experimental group (M=16.96, SD 2.3) and the students in the traditional group (M = 15.43, SD = 1.4) (t = 3.03, p = .004, df = 44.11). Meanwhile, the magnitude of the difference in the means was large (eta squared = .14).

Table 5: Independent-samples t-test for the experimental group

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pretest							
Equal Variances Assumed	.37	.54	-.13	56	.89	-.04	.34
Equal Variances Not Assumed			-.13	54.95	.89	-.04	.33
Posttest							
Equal Variances Assumed	4.31	.04	3.08	56	.003	1.53	.49
Equal Variances Not Assumed			3.03	44.11	.004	1.53	.5

Table 6: Paired-samples t-test for the experimental group

	Paired Differences					
	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Exp.	-2.64	2.24	-.42	-6.22	27	.000

A paired-samples t-test was also conducted and showed a statistically significant increase in the students' score from the pre-test (Tables 6 & 7). (Experimental: M = 14.32, SD = 1.15, t(27) = 6.221, p = .000<0.05); (Traditional: M = 14.36, SD = 1.42; t(29) = 2.92, p =.007<.05). The magnitude for the means of the experimental and the traditional group were large, respectively .58 and .22.

Table 7: Paired-samples t-test for the traditional group

	Paired Differences					
	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Traditional	-1.06	1.99	.36	-2.92	29	.007

Analysis for Students' Writings before and after CBI

The frequency analysis approach was applied to track the emergence of tense/aspect pairing and it shows some emergence of the two structures in students' writings on the second occasions. Table 8 shows the result of the analysis on two occasions.

Table 8: Frequency analysis of progressive/non-progressive of experimental group

	Pre-CBI (Appropriate - Inappropriate)	Post-CBI (Appropriate - Inappropriate)
Non-progressive (present/past)	141 (101 (71%) – 41 (29%)	138 (107 (78%) – 31 (22%))
Progressive (present/past)	98 (45 (46%) – 53 (54%)	109 (64 (59%) – 45 (41%))
Total	243 (149 (61%) – 94 (39%)	247 (171 (69%) – 76 (31%))

The promotion of the appropriate use of more progressive and non-progressive structures is easily seen in the percentage shown in table 8. This process is also observed in the written discourse performance of the students in the traditional group (Table 9). There is a subtle difference in the mean score of the appropriate use of the structures; that is, the experimental group seems to have improved slightly more than the traditional group.

Table 9: Frequency analysis of progressive/non-progressive of traditional group

	Pre-CBI (Appropriate - Inappropriate)	Post-CBI (Appropriate - Inappropriate)
Non-progressive (present/past)	135	(91 (67%) – 44 (33%) 140 (105 (75%) – 25 (25%))
Progressive (present/past)	85	(45 (52%) – 40 (48%) 99 (54 (54%) – 45 (46%))
Total	220	(136 (62%) – 97 (38%)) 239 (159 (67%) – 80 (33%))

DISCUSSION

According to Vygotsky and his followers, a good test for a good theory can be found in the real world, and useful science should be measured through its advantages for human beings. In addition, education is viewed as a powerful means to help promote development by arming students with scientific or theoretical concepts. In the same vein, this study was mainly concerned with presenting students with profoundly theoretical concepts and examining the development of the concepts in their verbalization which is the key means in the process of conceptualizing highly sophisticated knowledge. It followed Gal'perin's CBI in which the unit of instruction is concept. The theoretical concepts were first materialized and presented in a systematic way and then it was verbalized for the sake of triggering higher cognitive development. In the case of the current study, the related concepts were CG-based tense and aspect in English.

The analysis of the definition data from students in the experimental group revealed that students benefited from the treatment; it was found that the presentation of concept based on CBI framework did help them come up with theoretical definition. Their definition turned out to be mostly semantic and functional. The feature of perceptual was not found in their words, which can be related to their language ability and experience. Strong cases of coherence and interrelatedness of concepts and sub-concepts as sign of systematicity plus abstractness were also found in students' definitions. These features add up to the functionality of students' definitions. This type of definition, according to Negueruela (2003),

has the potential to be executed in the future. Through verbalization, students' awareness of the concepts and the grammatical structures improved over time. They gradually gained momentum in showing the features of semantic and functional in their definitions and reasoning. Moreover, beside semanticity and functionality, their verbalization became more systematic and it gained in more significance.

The quantitative analysis of students' performance on the pre-test and post-test both between the two groups and within the two groups displayed that students in the CBI group performed significantly better than the students in the traditional group. However, interestingly, students in the traditional group also showed a significant improvement after receiving the traditional instruction. This improvement in taking the grammatical questions was backed up by their progress in using more appropriate use of the relevant structures in their writing. In this regard, both CBI and traditional groups improved, though for traditional it was a subtle progress.

Supporters of the socio-cultural view refuse to give any guarantee that a certain structure will surface in learners' real-life linguistic performance as a result of their teaching method (Frazier, 2013; Lantolf & Poehner, 2008; Negueruela, 2003). This is due to the fact that they never believe in strong causality in the realm of education. Likewise, the primary objective here is arriving at some conceptual development which is believed to be the key factor in repelling language development and this was seen to have happened to some extent after CBI. Nonetheless, it can be said that students' responses to the tasks can be due to their current understanding of a certain structure or a certain grammatical concept.

A short but meaningful presentation of a certain structure from a rich perspective, like CG, may result in the appearance of that structure in language learners' production, yet Bielak and Pawlak (2013) did not have a satisfying result by simply presenting the CG-driven concepts of tense and aspect to EFL learners. They presented a full account of CG concepts to intermediate learners and compared their performance with a group receiving traditional treatment and one having no treatment. The performance of the traditional group was better than the other ones and the researchers concluded that the cognitive treatment was so complex for the learners. In the end, the

authors stated attributed the experimental learners' performance to the short instructional program and complex conceptual materials. The latter point appears to be in contrast with the principles of Gal'perin's CBI. Simplifying instruction and teaching language in a piecemeal fashion as suggested by Lantolf (2007) can result in a rule-of-thumb instruction. Meanwhile, having some verbalization opportunities might have helped learners better internalize the concepts.

In the current study CBI was applied to early teenagers with low language proficiency. Unlike other CBI-based studies, students lacked an explicit knowledge of the target structure; therefore, they did not have much difficulty remembering the related CG-driven concepts given to them. On the contrary, in other CB-based studies which had intermediate or advance level learner it was found that learners' OBA interfered with the new conceptual knowledge and understanding which were presented to them (Frazier, 2013; Negueruela, 2003). This may sound transparent to suggest that it might be more fruitful to rethink the current language teaching for early teenagers. Piecemeal fashion of presenting language seems rather easy and reduces the burden on teachers' shoulder; however, the nature of linguistic concepts is compromised (Lantolf & Zhang, 2017).

CONCLUSION AND IMPLICATIONS

The current study seems to be the first one which applied CG-based concepts in Gal'perin's CBI to teach CG-based progressive and non-progressive structures to EFL teenagers with low language proficiency. Data on the application of CBI is basically limited to intermediate and advanced learners who have already had an empirical knowledge of the related L2. Unlike other CBI-based studies, the presence of a second group in the present study helped shed more light on the impact of CG-based CBI on the development of certain concepts. Following the result of the current study and other CBI-based studies, CBI can be considered as a candidate for second and foreign language education as far as the importance of meaningful formal instruction is concerned.

In practice, it has long been argued that there is a big chasm between classroom teachers' real practice and second language researchers' and scholars' view of language education (Lantolf & Poehner, 2014; Ellis, 2006). We suggest that CBI can at least be taken

into consideration in the current teacher education courses so that teachers' formal instruction and direct teaching of linguistic items and grammatical features become more meaningful for language learners. CBI has the theoretical and pedagogical potential to arm learners with a highly sophisticated explicit knowledge and to do away with empty verbalism and too much abstractness. According to Vygotsky (1986), "practical experience also shows that direct teaching of concepts is impossible and fruitless" (p. 150). Direct teaching of verbalism will usually award us nothing but empty verbalism, parroting words by individuals. Vygotsky called for a change in the presentation of concepts since he contends that verbalism does not necessarily results from concepts but the way of presenting and teaching them will lead to verbalism. The current study enjoyed a type of instruction (i.e. CG) that directed learners' attention to the meaning that the language features conveyed rather than simply focusing on the form of the features.

It was found that learners basically had difficulty knowing the inherent quality of verbs as defined in CG. When it comes to vocabulary teaching, especially verbs, we believe it is necessary that English textbooks and L2 materials provide learners with such pieces of information since they are vital for a more meaningful learning.

Yet, this study is not without limitations, as it would be better for internalization if the verbalization tasks were doubled. This was not possible since students were supposed to prepare for their final exams and they were not willing to spend more time on homework. Oral verbalization form might have helped further the internalization process if we had access to recording devices for each student. Due to their proficiency, we decided to help them get familiar with the concepts and go from easy tasks, such as multiple-choice to short-answer questions, to more open-ended questions for written performance after receiving more concept instruction. Therefore, this needed a much longer period of time. This last reason led to cancelling the administration of a second posttest. It might have been possible to unravel the impact of CBI on language learners' conceptual understanding over a longer period of time.

The analysis of the result showed that students in this study had lack of knowledge about the inherent traits of each verb and this led to many mistakes on their part; therefore, with a lingered amount of

time this type of future knowledge can be given to language learners and can be examined for its efficacy. In the end, it requires much care and caution to claim generalizability for the result of the study mainly due to the fact that the test for the pre-test and posttest did not go through a strict test of validity and reliability.

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