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Faculty of Letters and Languages

Department of English

**Investigating the Effectiveness of Cooperative Learning in
Enriching Students' Technical Vocabulary during Translation
Activities**

**Case of 1st Year LMD Biology Students at L'arbi Ben M'hidi
University**

**A Dissertation Submitted in Partial Fulfillment of the Requirements for the
Degree: Master in Language Sciences and Teaching English as a Foreign
Language**

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Candidate Declaration Form

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Date: 15 /05 / 2016

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Signature of the candidate

.....

Dedication

In the name of Allah,

First I thank Allah for his help and guidance

This work is dedicated:

To my beloved mother and dear father

*To my sisters: Wassila, Dounia, Mounira, Zineb, Meriem and
their children*

To my brothers: Yassin, Mohamed and Abd rahmen

To my fiancé Abd rahman

*To all my friends and the people who encouraged me to achieve
this work*

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Abstract

Language learning is a complex process where vocabulary acquisition is important. Generally speaking, vocabulary learning/ teaching is a challenging task for teachers because it demands the selection of the appropriate method or technique in order to achieve the required objectives. The instruction of such aspect becomes more complicated when English is taught to other specialties where learners suffer from the problem of learning the terms related to their field of study as they cannot retrieve them whenever needed. On the basis of this view, the present study aims at facilitating this task by integrating a new approach called cooperative language learning. To investigate the effectiveness of cooperative language learning in teaching technical vocabulary, firstly, an experimental method is used with a quasi-experimental design. The participants were fifty LMD students of Biology department at Larbi Ben M'hidi University, Oum El bouaghi. They were divided into two groups: the control group and the experimental group. The two groups were pre-tested in the first meeting by administering a test that consists of four different vocabulary activities. Then, both groups received the treatment in which the control group members were taught technical vocabulary by their teacher following the ordinary method (direct translation), whereas, the experimental group members were exposed to cooperative language learning (Jigsaw I) as an alternative approach to facilitate technical vocabulary learning. After that, a post-test was administered and it was the same as the pre-test. The findings of the study support the use of cooperative language learning as an effective approach in comparison with the traditional one. These positive results encourage the ESP teachers to change the traditional technique (translation) for the most effective one cooperative language learning.

LIST OF ABBREVIATIONS

CIRC: Cooperative Integrated Reading and Composition

CLL: Cooperative Language Learning

EFL: English as a Foreign Language

ESL: English as a Second Language

ESP: English for Specific Purposes

GI: Group Investigation

L1: First Language

L2: Second Language

SLT: Structured Team Learning

STAD: Student Team Achievement Divisions

STL: Student Team Learning

TAI: Team Assisted Individualization

TGT: Team Games Tournament

VLSs: Vocabulary Learning Strategies

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General Introduction

Vocabulary learning plays an important role in language learning. To achieve a successful instruction, an effective technique should be implemented. Different approaches and techniques are adopted by ESP teachers for presenting new terms to their students, yet not all of them are useful. Cooperative language learning, for instance, may help ESP students to master either general or subject-related vocabulary.

Statement of the Problem

Vocabulary is considered as the basis of any language structure, and it plays a very significant role in the foreign language acquisition. It is taught via different methods, approaches, strategies, techniques or activities to ESP students. The issue which is raised here is finding out a method which is more effective for permanent acquisition of such terminology. Generally, in ESP classes the method used for teaching terminology is direct translation in which the teacher translates directly from English to French or Arabic languages. Unfortunately, this method can help the learners to some extent to acquire technical terms but this may not last for a long period of time. So, an effective method that assists ESP learners to master, memorize and retrieve technical vocabulary in the long term is demanded.

Aim of the Study

Language teaching/ learning could not be carried out successfully without using approaches or techniques which facilitate such task. One of those approaches which is applied to teach English language vocabulary is called cooperative language learning (CLL). The present study is carried out to test the effectiveness of CLL in teaching English to biology students.

Research questions and hypothesis

The following question is raised:

Is there any significant difference in technical vocabulary learning between students who are taught technical vocabulary through cooperative language learning and those who are not?

In order to answer the research question, it is hypothesized that students who are taught technical vocabulary through cooperative language learning would show a

significant improvement in their technical vocabulary learning than those who are taught through the ordinary method.

Means of the Research

The present study followed an experimental method with a quasi-experimental design. The target population is first year LMD students of Biology department at Larbi Ben M'hidi University. Two preexisting groups are randomly selected to represent the whole population. One is the experimental group and the other is the control group. The pre-test is administered to both groups in the first meeting. Then, a post-test which was the same as the pre-test is conducted to the both groups after the treatment period. The test consists of four different vocabulary activities which are related to the students' field of study.

Structure of the dissertation

This dissertation consists of two chapters: one theoretical and one practical. The theoretical chapter is made up of two sections. The first section is devoted to provide a clear picture about cooperative language learning by stating its definition, the difference between cooperative learning and group learning, types of cooperative learning groups, the elements of cooperative learning, the different cooperative language learning methods and the main goals of cooperative language learning. The second section focuses on the concept of vocabulary by providing its definition, its types, the importance of vocabulary and the main factors that affect vocabulary learning , the definition of technical vocabulary and the main techniques and strategies followed in vocabulary learning/ teaching.

The practical chapter presents the methodology of the research, the analysis and discussion of the results obtained from the pre-test and post-test, pedagogical recommendations, limitations of the study and suggestions for further research.

Chapter one: Theoretical Background

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General Introduction

Learning a language cannot be reached without learning its vocabulary, I.e., to acquire the vocabulary and retrieve it whenever it is needed.

Since vocabulary is seen as the core of the language, it should be taught via effective strategies and techniques. In ESP classes, for instance, the teacher uses direct translation as a primary method to teach new vocabulary. This method can help the learners to acquire vocabulary of the target language to some extent but it stresses more on the teacher's role rather than on the learner.

Cooperative language learning (CLL) is an instructional approach in which learners work in cooperated situations by being provided with opportunities to explore and learn new vocabulary by themselves and cooperatively.

In this chapter, light will be shed on CLL and technical vocabulary. Section one is devoted to CLL by stating its definition; the difference between cooperative learning strategy and group work, types of cooperative learning strategy and the different elements that make the strategy more effective; also, the methods that are used in cooperative learning strategy. In addition, there will be a part that presents the importance and some benefits which are gained from using the strategy. In section two, we will focus on vocabulary by stating its definition and different levels. Then we will go deeply by providing the definition of technical vocabulary and its types as we will state some strategies and techniques of vocabulary teaching. Finally, there will be a section that provides us with the effectiveness of the cooperative learning strategy on teaching technical vocabulary.

Section One: Cooperative Language Learning

1.1.1. Definition

Through the history of language teaching many approaches and methods have been followed. They are divided into classical approaches and current or modern ones. One of them is known as the cooperative language learning which is categorized under the umbrella of current methods.

Cooperative language learning has been defined by many researchers. According to Taylor and Mackenney (2008, p.222), “cooperative learning is a method of learning through the use of groups.” Richard and Schmidt (2002, p.144) noted: “cooperative learning is an approach to teaching and learning in which classrooms are organized so that students work together in small cooperative teams.” In other words, CLL is mainly based on grouping students to work cooperatively. Richards and Rodgers (2001) went further claiming that the main principle in cooperative learning is cooperation rather than competition. Cooperative language learning is an instructional strategy that is based mainly on grouping students to work collectively in order to reach shared goals and to facilitate the learning materials as it is recognized by Johnson et al ., (1994 , as cited in Richards & Rodger, 2001)

Cooperation is working together to accomplish shared goals within cooperative situations, individuals seek outcomes beneficial to themselves and all other group members. Cooperative learning is the instructional use of small groups through which students work together to maximize their own and each other’s learning. It may be contrasted with competitive learning in which students work against each other to achieve an academic goal such as a grade of “A” (p.195).

Also, Olsen and Kagan (1992, as cited in Richard & Rodgers, 2001) defined cooperative learning as “group learning activity organized so that learning is dependent on the socially structured exchange of information between learners in groups and in which learner is held accountable for his or her own learning and is motivated to increase the learning of others”(p.192).

Many researchers had defined the cooperative learning strategy according to their different perspectives but all definitions are in the same circle. Another definition is went back to Richard and Rodgers (2001, p.192) “cooperative language learning (CLL) is a part of a more general instructional approach also known as collaborative learning (CL). Cooperative learning is an approach to teaching that makes maximum use of cooperative activities involving pairs and small groups of learners in the classroom". Similarly, Jolliffe (2007, p.3) provided a brief definition of CL stating that «cooperative learning requires pupils to work together in small groups to support each other to improve their own learning and that of others”.

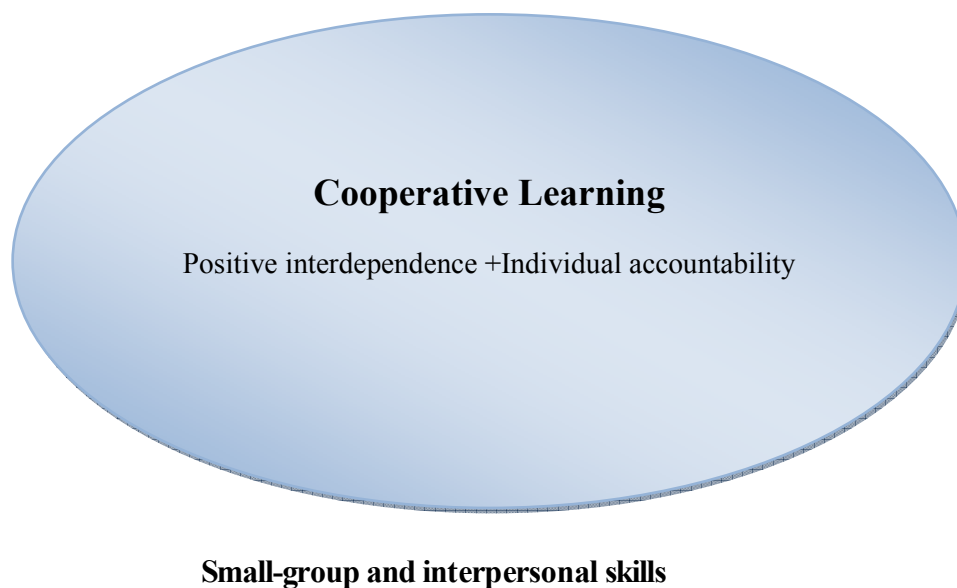
All in all, cooperative language learning is a method based on learning in small groups to achieve an academic goal as it focuses on creating learners who are responsible of their and others’ learning. Students who work cooperatively benefit from each other by sharing their thoughts and information during a given activity.

1.1.2. The Differences between Cooperative Learning and Group Work

During the teaching process, the teacher may follow either grouping instruction or individualistic one. Whereas the latter is known as having students learn individually, the former is recognized when the teacher applies the grouping methods. On the one hand, both kinds of instructional approaches are based on having students working in groups. On the other hand, the distinction between them is more essential before deciding which one to

be used. According to what is mentioned previously, cooperative learning is a strategy in which students work in groups cooperatively to accomplish common learning goals. According to what is stated by Jolliffe (2007), the fundamental elements of cooperative learning are positive interdependence and individual accountability in addition to small group and interpersonal skills.

Figure1: Elements of Cooperative Learning



(Jolliffe, 2007 P. 4)

In contrast, group work is the most applied method as described by Lump and Haney (1998) in which there is a kind of competition rather than cooperation (Jolliffe, 2007). Group work in comparison with CL is highly unstructured since in situations only one member does the work. Woolfolk (2001) stated the point that makes CL and group work different in the following quotation:

The term groups learning and cooperative are often used as if they mean the same. Actually, group work is simply several students working together, they may or may not be cooperating. Cooperative learning is an arrangement in which students

work in mixed ability groups and are rewarded on the basis of the success of the group.

1.1.2. Types of Cooperative Learning Groups

According to some researchers and scholars (Johnson & Johnson, 1989; Richard & Rodgers, 2001), cooperative language learning can take mainly three positions or forms.

1.1.3.1. Formal Cooperative Learning Groups

In this type, the grouped students are working together for one class to several weeks in order to achieve shared learning goals. Formal cooperative learning groups are used to teach specific content where the students are asked to complete specific tasks and instructions such as: writing a report; conducting a survey or experiment; learning vocabulary; decision making; problem solving or reading a chapter...etc. This type of groups is considered the most difficult to implement. In here, the teacher should make some elementary phases like specifying the objectives for the lesson; making a number of instructional decisions such as the group size, the assignment method, the time of working together; explain the task and positive interdependence by clarifying the assignment (Richard & Rodgers, 2001; Smith, 1996).

1.1.3.2. Informal Cooperative Learning Groups

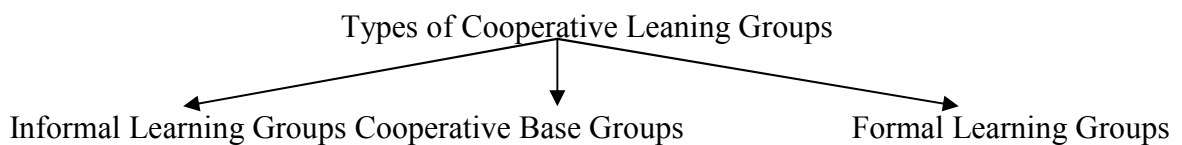
They are ad-hoc groups where the students are working for few minutes to one session. During direct teaching, teachers use informal cooperative learning groups to focus students' attention, to facilitate learning and to assure that students cognitively process the material to be taught. In comparison with formal cooperative learning groups, it is less structured (Richard & Rodgers, 2001; Smith, 1996).

1.1.3.3. Cooperative Base Groups

They are long term groups since they last at least one year. Base groups are heterogeneous groups with stable membership. They aim at exchanging support, encouragement, help and assistance the students need to make academic progress (Richard & Rodgers, 2001; Smith, 1996).

Types of cooperative learning groups are summarized in the following figure

Figure2: Types of Cooperative Learning Groups



Characteristics	Short-term	Long-term	Stay together until the
	Less structured	Peer support	task is done
	Turn to your	Heterogeneous	Structure facilitate 5
	neighbor		critical elements
			heterogeneous or
			homogeneous

Use	<ul style="list-style-type: none"> - In any class size -Focus attention prior to lecture- set to break up lecture-“reset”, check for understanding, review what was said, summarize the main points. 	<ul style="list-style-type: none"> -Academic support- study for test, make sure all are achieving routine tasks- homework, attendance, personal support- sympathetic listening, trust building, cross-cultural relationship building. 	<ul style="list-style-type: none"> -Review homework -Work through a problem together -Review for a test -Perform a lab experiment -Write a report -Do a project
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(Smith, Johnson and Johnson, 1992)

1.1.4. The Cooperative Learning Elements

The success of cooperative learning depends on a careful structuring of the groups. As it is acknowledged by Richards and Rodgers (2001), "the success of CL is crucially dependant on the nature and organization of group work. This requires a structured program of learning carefully designed so that learners interact with each other and are motivated to increase each other's learning"(p.196). It is agreed that there are five key elements that make CLL workable, as they are critical to the success of formal cooperative learning groups (Smith, 1996)

1.1.4.1. Positive Interdependence

As described by Jolliffe (2007, p.3),"we sink or swim together". Positive interdependence is considered as the heart of cooperative learning where the students are required to contribute to the learning of the group. According to Richards and Rodgers (2001, p.196), "positive interdependence occurs when group members feel that what helps one member helps all and what hurts one member hurts all". It means that success of the

group has to be gained by each student via mutual support. In order to create and strengthen the positive interdependence as a key element of cooperative learning there are some techniques to be followed as joint rewards by giving bonuses and rewards to each member of the successful group, divided resources as a way to make each member participates in completing and accomplishing the shared goals

1.1.4.2. Individual accountability

Also known as personal responsibility, in cooperative group each member is responsible in completing the given assignment as he has to avoid hitch-hiking on the work of others (Johnson & Johnson, 1989). Individual accountability based on the evaluation of each students and the results are given back to the group as it is stated by Richards and Rodgers (2001, p.197), “individual accountability involves both group and individual performance, for example by assigning each student a grade on his or her portion of a team project or by calling on a student at random to share with the whole class, with group members or with another group”. According to Johnson and Johnson (1989), individual accountability could take place through some ways as testing each group member, selecting randomly on student to represent the whole group work or having each student to explain what they have learnt to classmates.

1.1.4.3. Group Formation

Another element that contributes to the success of cooperative learning is group formation which is considered as an important factor in creating positive interdependence (Richards & Rodgers, 2001). The well formed groups are obtained when the group members discuss the best way for achieving their goals and maintaining effective working relationships (Johnson & Johnson, 1989). Also Richards and Rodgers (2001) stated the main factors which are involved in setting up group, one factor is the size of the

group which depends on the task, the age of learners and time, the other is the group member selection (teacher-random selection, student selection). Third, students' roles in groups by assigning each group member a role to play.

1.1.4.4. Social Skills

For an effective cooperation students have to be taught social skills which are presented in form of leadership, decision making, trust building, communication and conflict management skills (Johnson & Johnson, 1989). According to Richards and Rodgers (2001, p.197),” social skills determine the way students interact with each other as teammates; usually some explicit instruction in social skills is needed to ensure successful interaction”. So, the purpose behind teaching social skills is to guarantee an effective cooperation and interaction between group members.

In order to facilitate cooperation and interaction, Gillies(2003, p.38) stated a number of interpersonal skills which should be followed since the cooperation starts from each group member and not from the whole group:

- Actively listening to each other during group discussion;
- Considering the other persons perspective on issue;
- Stating ideas freely without fear of derogatory comments;
- Being responsible for one's own behavior ; and,
- Constructively critiquing the ideas presented.

1.1.4.5. Face-to-Face Promotive Interaction

Promotive interaction comes after setting up positive interdependence where the students promote each other's success by helping, assisting, supporting, encouraging and

facilitating each other's efforts.. Promotive interaction involves cognitive processes or activities such as explaining orally how to solve problems, discussing the nature of the concepts being learnt, teaching one's knowledge to classmates and connecting present with past learning. In addition, it leads to interpersonal processes such as the ability to influence other's reasoning and conclusions interpersonal rewards and social support. For a meaningful face-to-face promotive interaction it should be taken into consideration the group size to be small. The results behind promoting each other's success are gained in higher achievement and in getting to know each other on a personal and professional level. (Johnson & Johnson, 1989; Smith, 1996)

1.1.5. Cooperative Language Learning Methods

Cooperative language learning as a strategy can take different forms which fall into two categories; **structured team leaning** and **informal group leaning** methods. Each category contains several methods that are met under the formality principle.

1.1.5.1. Structured Team Learning

1.1.5.1.1 Student Team Learning (STL)

Student Team Learning methods are developed firstly at Hopkins University. As it is mentioned earlier that cooperative language learning based mainly on the principle of learning together and being responsible for one another's success; STL also emphasizes on the achievement of the shared learning goals collectively among group members. According to Slavin(1996, pp20-21),” in Student Team Learning students’ task is not to do something as a team but to learn something as a team». Then, he identifies three main concepts to all student team learning methods:

a) Team rewards, in classes where STL is used the teams will gain rewards if they succeed in achieving and completing the given assignment, b) Individual accountability, means that

the team's success is based on each individual learning of all team members. It makes each member works with one another to prepare himself/ herself and his/ her mate ready for any assessment or quiz, c) Equal opportunities for success, that is, high average and low achievers are equally needed to contribute to the team learning by improving their own past performance (Slavin, n,d). He also tries to provide a clear picture of SLT by stating four principle methods: two are general cooperative learning methods adoptable to most subjects and levels: Student Team Achievement Divisions (STAD) and Teams Games Tournament (TGT), while Team Assisted Individualization (TAI) and Cooperative Integrated Reading and Composition (CIRC) are used in particular subjects and at particular levels (Slavin, n.d).

1.1.5.1.2. Student Team Achievement Divisions (STAD)

According to Salkind (2008, p.191),

STAD is a cooperative learning method developed by Robert Slavin that is used in learning factual content (e.g. vocabulary, social studies or science information) as well as discrete skills (e.g. spelling, math computation or language mechanics skills). Typically, this type of CLL method is used in the end of a unit of instruction to promote active students practice in preparation for a test on the content.

As it is stated by Slavin (1994), in STAD students are grouped heterogeneously into four-members learning teams that are mixed in performance level, sex and ethnicity. The main idea behind STAD is assimilated in having students work on a given material within their teams to ensure that each individual has learnt well the material, and then they take quizzes individually. The obtained scores of each member will contribute to the group score by which the group will receive certificates and rewards. So, it is a kind of individual

accountability which motivates group members to work on the material by explaining it to each other to succeed (Slavin, n.d). Kagan (1985, p.68-69) presented five elements of STAD:

- Class presentation: The material is initially presented by the teacher or in an audiovisual presentation on the whole class.
- Teams: The teams are composed of four to five heterogeneous students who represent a cross section of the class. The group members work together in a peer-tutoring format to master the material of the learning unit. The group members can also quiz each other to master the information.
- Quizzes: Students are evaluated through quizzes that assess individual achievement on the material presented to the class.
- Individual improvement scores: A detailed scoring system allows students to earn points for their groups based on improvement over past performance.
- Team recognition: Recognition is provided for individuals for high weakly performance or who are most improved.

Student Team Achievement Divisions is seen as the most appropriate for teaching well defined objectives like language usage, science facts and concepts...etc.

1.1.5.1.3. Cooperative Integrated Reading and Composition (CIRC)

CIRC is a comprehensive program for teaching reading and writing on the upper elementary and middle grades (Stevens et al. 1987, as cited in Slavin, n.d). In CIRC, while the teacher is working with one reading group, others are grouped in pairs within their groups and working on a series of engaging activities such as reading to one another,

summarizing stories, practicing spelling and vocabulary...etc. They work to master the comprehensive skills. Then, as the method indicates, learners are involved in writing drafts, revising and editing one another's work. The group is rewarded according to the average of the quiz scores of all team members on the reading and writing activities which based mainly and emphasizes on individual accountability. (Slavin, 1996)

1.1.5.2. Informal Learning Groups Methods

1.1.5.2.1. Jigsaw Method

Jigsaw is another form of cooperative learning which was originally designed by Elliot Aronson and his colleagues (1978). In Jigsaw method, students are working in six-member teams on material that is divided into sections on which each student works. Then, the students that read the same section, they meet in expert groups to discuss it after they return to their teams to explain what they have learnt with the others. By the end, the students will be assessed on the whole material (Kagan, 1985; Slavin, 1996).

Later, Slavin (1994) developed a new version of Jigsaw method called JigsawII that is based on the original one with some modification at Hopkins University. In JigsawII, students are working on the same material (e.g. books, chapter, short story or a biography...). Then, each group member is randomly chosen to become an expert to meet his expert mates from the other groups to discuss their common points and then return to their groups to teach what they have learnt. JigsawII is seen as similar as STAD and TGT in both teaching-learning process and assessment (Kagan, 1985; Slavin, 1996).

1.1.5.2.2. Learning Together

Learning Together is one of the cooperative learning models that was developed by David Johnson and Roger Johnson (1999). It involves students working in four to five

heterogeneous teams. The groups earn rewards through the group product. That is to say, Learning Together emphasizes more on how well the students are working together as a group (Slavin, 1996).

1.1.5.2.3. Group Investigation

Group Investigation is a model of informal cooperative learning methods which was developed by Shlomo and Yael Sharan at the University of Tel Aviv (1992). Group Investigation was designed as a classroom organization plan that involves students in small groups to work cooperatively with instructions such as inquiry, group discussion and project realization (Slavin, n.d). In GI, students form their own groups (two-six members), selecting their topics from a unit being studied by the entire class, they divide it into individual assignments (tasks), and then, they carry out the activities to prepare group reports that will be displayed to the whole class (Richards & Rodgers, 2001; Slavin, 1996). Group Investigation, according to Richards and Rodgers (2001), requires students to be more experienced with more structured group work to be more effective.

1.1.6. Goals of Cooperative Language Learning

Cooperative language learning as an instructional approach is seen as a learner-centered approach rather than teacher-centered one where learning is improved through group interaction (Richard & Rodgers, 2001). According to Richards and Rodgers (2001, p.193), CLL has its goals which can take place in language teaching classroom:

1. To Provide opportunities for naturalistic second language acquisition through the use of interactive pair and group activities,
2. To provide teachers with methodology to enable them to achieve this goal and one that can be applied in a variety of curriculum settings(e.g., content-based, foreign language classroom , mainstreaming),

3. To enable focused attention to particular lexical items, language structures and communicative functions through the use of interactive tasks,
4. To provide opportunities for learners to develop successful learning and communication strategies and,
5. To enhance learner motivation and reduce stress and to create a positive affective classroom climate.

Conclusion

In conclusion, Cooperative Language Learning is an instructional approach that focuses on having students work in groups cooperatively in order to accomplish shared learning goals. This approach stresses on positive interdependence and individual accountability as the key elements to make the group learning more effective in addition to social skills, group formation and face-to-face promotive interaction. Cooperative language learning as an approach can take many forms that could be structured team learning or informal learning groups. The use of cooperative language learning takes place in teaching the different elements of the language especially the most important one vocabulary. The following section will focus on the concept of vocabulary.

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Introduction

Language is a system of communication which is based mainly on what is called vocabulary. This later is considered as the core of the language and its mastery plays an essential role in language learning. Since vocabulary is very important; it should be learnt and taught carefully

Interestingly, this section is devoted for defining vocabulary and its types by focusing on technical vocabulary. It further discusses the importance of vocabulary in language learning and in ESP in particular, as it provides review of some strategies and techniques which are used in vocabulary learning. Finally, the role of cooperative language learning in teaching and learning technical vocabulary is highlighted.

1.2.1. Definition

Vocabulary as a primary component of the language has been defined by many researchers and linguistics. According to Oxford Advanced Learners' Dictionary, vocabulary is "all the words that a person knows and uses; all the words in a particular language, and the words that people use when they are talking about particular subject". It is also defined by Thornbuy (2006, p.240) as "the area of language learning that is considered with word knowledge". Then, he defines word as "the smallest language item that can occur on its own" (p. 242). As stated by Richards and Schmidt (2002, p.588)," it is the smallest unit of the linguistic units which can occur on its own in speech or writing". Also, the term word has been defined by Carter (as cited in Takac, 2008), as" the smallest meaningful unit of language". Actually, vocabulary is the bag that carries all the language words as stated by California Adult Literacy Professional Development Project (CALPRO) "vocabulary is the knowledge of word meanings. A person's vocabulary consists of all the words he or she knows and understands". In addition, vocabulary does not contain only single words; it may exceed to compound words, phrases and idioms, in here, Richards and Schmidt (2002, p.580) defined vocabulary as a set of lexemes, including single words, compound words and idioms. Similarly, Takac (2008, p. 6) stated that:

Vocabulary is made up of a variety of forms, such as morphemes, both free and bound (e.g. laugh, or the prefix Un), their combination, i.e. derivatives (e.g. laughter, unbelievable), compounds (e.g. bus conductor), idioms, i.e. units that cannot be reduced or changed and whose meaning cannot be retrieved from individual meanings of their components (e.g. to bite the dust), and other fixed

expressions ... catchphrases... prefabricated routines or prefabs (e.g. if I were you), greeting... and proverbs.

Furthermore, Hornby(1995, as cited in Alqahtani, 2015, p.24) defines vocabulary as” the total number of words in language; vocabulary is a list of words with their meanings”.

In sum, vocabulary is the major part of the language and the learning of that language depends on the learning of its vocabulary. That is to say, not just words but it extends to compound words, idioms, phrases ...etc.

1.2.2. Types of Vocabulary

According to some experts, vocabulary could be divided into two fundamental types in relation to the four language skills. Receptive vocabulary which also known by passive vocabulary and Productive vocabulary or active one.

1.2.2.1.

Rece

ptive Vocabulary

This kind of vocabulary goes hand in hand with receptive skills, listening and reading. Receptive vocabulary is assimilated in the words that the learners recognize and get their meanings from the context while they are reading or listening (Stuart Webb, 2005 as cited in Alqahtani, 2015). According to Nation (2000, p.37), “receptive carries the idea that we receive language input from others through listening or reading and try to comprehend it”.

1.2.2.2.

Prod

uctive Vocabulary

In contrast with receptive vocabulary and as its name indicates productive vocabulary is the words that the learners recognize and can pronounce correctly. This kind of vocabulary takes place with productive skills, speaking and writing, by which the learners can express their thoughts and opinions to others. Productive vocabulary is the sum of what is needed for receptive vocabulary in addition to the ability to speak and write (Nation, 2015; Stuart Webb, 2005 as cited in Alqahtani, 2015).

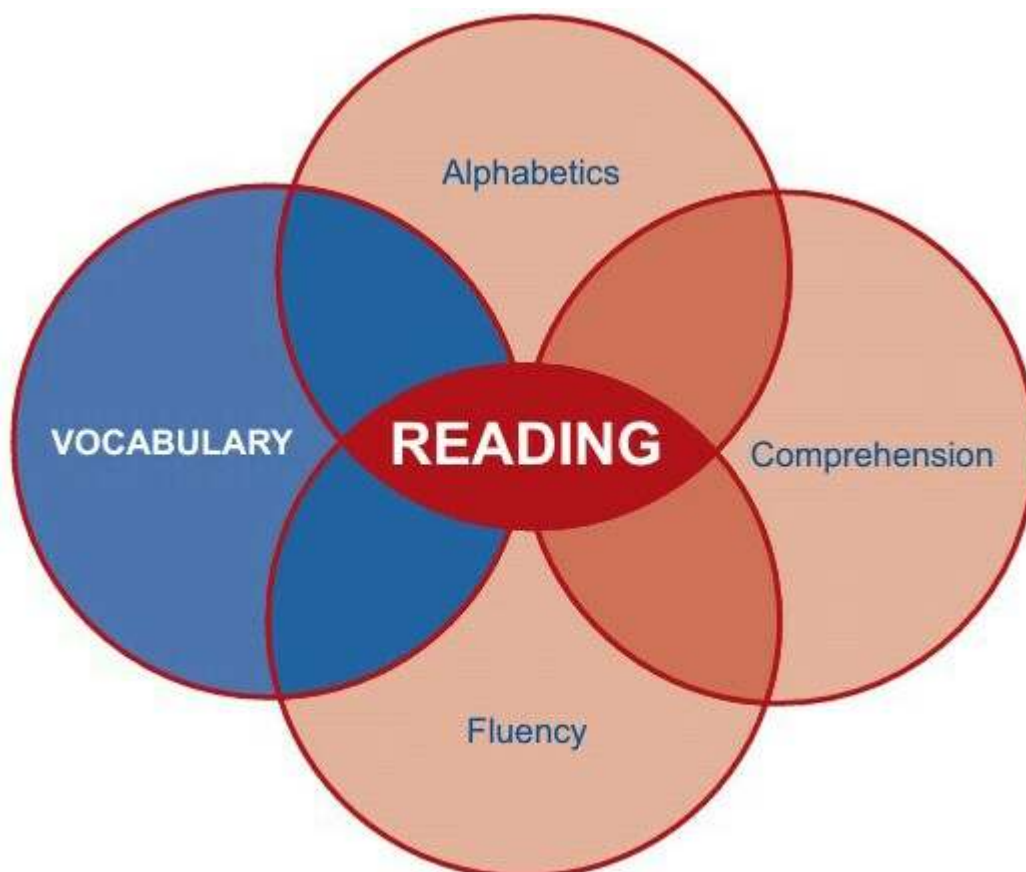
1.2.3. Importance of Vocabulary

Certainly, vocabulary is the fundamental element of any language which demands a careful learning and teaching due to its vital role and importance that touch all what is related to the language. Many linguists shed the light on the importance of vocabulary after it was neglected to some extent in compared to grammar. Willis (2003, p. 184) declared

that there is now an increasing tendency to give pride place in EFL syllabus to lexis rather than grammar notions or functions.

Furthermore, vocabulary importance becomes clearer when it comes to the four language skills (Writing, reading, listening and speaking). Accordingly, many researchers and scholars emphasize the importance of vocabulary knowledge on reading comprehension which is considered as a crucial component as illustrated by CALPRO (2007)

Figure 3: The Four Components of Reading



Also Kamil (as cited in CALPRO, 2007) believes that there is a correlation between vocabulary and reading achievement. Similarly, the National Reading Panel (as cited in CALPRO, 2007, p.1) reported that vocabulary occupies an important middle ground in learning to read. Oral vocabulary is a key to learning for it makes the transition from oral to written forms. Reading vocabulary is crucial to the comprehension process of a skilled reader (p. 4-3). That is to say, whenever the vocabulary knowledge increases, the reader will become better and better from both sides of comprehension.

Besides, listening comprehension is influenced by vocabulary knowledge. Lyuch (2009) argues that “it seems that lexical knowledge in particular knowledge of how words sound in natural speech is a greater help to second language listener than their knowledge of grammar” (p.40). In here, the importance of vocabulary in listening comprehension appears when someone listens a conversation either as a member or just a listener (Schmitt, 2000).

Moreover, in teaching writing, generally the teachers emphasize more on the grammatical features of the composition than the lexis. The later requires more attention as described by Ellis (as cited in Schmitt, 2000 p.155), “... lexical errors tend to impede comprehension more than grammatical errors as more serious than grammatical errors”. So, in writing the assessment does not only depend on grammar; it should emphasis more on vocabulary. Wilkins (1972, p.97) states that “ there is not much value in being able to produce grammatical sentences if one has not got the vocabulary that is needed to convey what one wishes to say ... while without grammar very little can be conveyed, without vocabulary nothing can be conveyed”.

Another dimension of vocabulary importance is recognized in terms of communication and language use. Nation (2001) describes the relationship that links language use and vocabulary knowledge as “complementary”. Schmitt (2000, p.55) emphasizes that” lexical knowledge is central to communicative competence and to the acquisition of second language”. In other words, the improvement of communicative competence and L2 is more sensitive to the development of vocabulary. Likewise, Rivers and Numan, 1991(as cited in Alqahtani, 2015) assert that the acquisition of an adequate vocabulary is essential for successful second language use because without an extensive vocabulary we will be unable to use the structures and functions we may have learned for comprehensible communication. In precise words, the main idea behind the importance of vocabulary is presented by Neunm and Divyer (2009) who defined vocabulary as “words we must know to communicate effectively; words in speaking”. In here, they enclosed the importance of vocabulary in terms of communication (language use) and language skills.

In addition, the mastery of English language vocabulary is not only a matter of ESL/ EFL learners; it extends to those who learn English for Specific purposes (ESP).

All in all, Vocabulary has a crucial role in language learning since it fosters the four language skills and the communicative competence. Its development also boosts the development of the language.

1.2.4. Technical Vocabulary

The term vocabulary is the most familiar one when we talk about General English (GE). However, when it comes to English for Specific Purposes (ESP) it is called “**specific vocabulary**” or “**subject related vocabulary**” as described by Deller and Price (2007) “every subject has its own specific key vocabulary”(p.45). In ESP, special vocabulary which is related to the subject area is called **Technical Vocabulary**.

1.2.4.1. Definition of Technical Vocabulary

Technical vocabulary has been defined by many researchers; Brooks (n.d. p, 160) defined it as words that are recognizably specific to particular topic, field or discipline. Similarly, Yelda(n.d, p.9) has defined technical vocabulary s words or phrases that are used primarily in a specific line of work or profession. Nation (2000) asserts that technical vocabulary requires the learner have a special knowledge in the field. Technical vocabulary is specific words which are employed in a specific field and cannot be used in another field; for example, medicine, mathematics and economics...etc. As Nation (2000, p.) states:” technical words contain a variety of types which range from words that don’t usually occur in other subject area”. According to, Ragini (n.d, p.2), technical Vocabulary is the specialized vocabulary which evolves due to the need for experts in a particular field to communicate with clarity, precision, relevance and brevity.

1.2.4.2. Types of Technical Vocabulary

Technical vocabulary- as the wide range of words related to specific disciplines and fields- has two main types **fully- Technical vocabulary** and **Semi-technical vocabulary**.

1.2.4.2.1. Fully-Technical vocabulary

Fully technical vocabularies are words closely related to a specific field or discipline and they are not known and introduced in general language. As stated by Fraser (n.d, p.124), “fully technical vocabulary consists of words with meanings which are clearly technical; they are specific to the field and not likely to be known in general language”.

1.2.4.2.2. Semi-Technical Vocabulary

According to Baker (1988, p.91),

Sub-technical vocabulary covers a whole range of items which are neither highly technical and specific to a certain field of knowledge nor obviously general in the sense of bring everyday words which are not used in a distinctive way in specialized texts.

Semi-technical or sub technical vocabulary also known as academic vocabulary refers to vocabulary which is used in both general and specialized languages with higher frequency in specific fields.

1.2.5. Factors Affecting Vocabulary Learning

Vocabulary learning is a challenging task for both teachers and students because there many factors which may have an effect on vocabulary development

According to Takac(2008) one of the main factors that influences vocabulary acquisition is the impact of the first language(L1) which may facilitate the acquisition of L2 items as it may cause a kind of difficulties and obstacles. In here, the effect of this factor appears when L2 learning is based on what is called “equivalence hypothesis”. In the latter, as claimed by Ringbon(1987, as cited in Takac, 2008) “ the leaner tends to assume that the system of L2 is more or less the same as in his L1 until he has discovered that it is not”. In other words, L1 can be considered as an obstacle of vocabulary acquisition when the learners transfer negatively to L2.

Memory is another factor which has a great impact on the learning process. Schmitt (2000) pointed out that forgetting is a natural fact of learning. Accordingly, Takac(2008) stated that new presented words could be forgotten as well as the well known ones when the learners do not use the language or stop the language learning . By nature memory is classified into two types: short-term memory (working memory) which has small capacity and long-term memory which has unlimited storage capacity. It remains information to be used in the immediate future, while the former is used to hold information while it is processing and just for some seconds (Schmitt, 2000). To overcome such challenge there are some techniques suggested by some researchers which facilitate the transfer of the learning into long- term memory such as imaging, use of mnemonics, attaching the new information to the preexisting ones through grouping new word with some previously existing ones... (Schmitt, 2000; Thornbury, as cited in Takac, 2008).

Besides, the organization of the mental lexicon is another factor that has an effect on vocabulary acquisition. The mental lexicon is defined by Hulstjin, 2000(as cited in

Takac, 2008) as “a memory system in which a vast number of words, accumulated in the course of time, has been stored”. Whenever this system is more organized and structured the learners can easily recall and retrieve the lexical item to express what they want. The processes of gathering, organizing and storing new lexical information are not easy since there are some factors that may obstacle them. The organization of L2 mental lexicon will be complicated by the presence of at least one more language as well as the similarities and differences between L1 and L2 mental lexicon (Takac, 2008).

There are many factors which have a sensitive impact on vocabulary acquisition which related to both mental processes as well as the conditions in which vocabulary presents itself to learners, for instance, through teacher presentations, reading texts or self-access work (Hedge, 2000).

1.2.6. Vocabulary Teaching Techniques

Teaching new vocabulary can be considered as a hard task in which the teacher has to present the meaning and the form of the new words to be understood and to be acquired by the learners. In order to facilitate this task, teachers should select the most appropriate techniques according to the presented terms. We are going to highlight the most applied techniques.

1.2.6.1. Using Objects

Using object technique involves realia, visual aids and demonstration. This technique helps the learners in memorizing the new words because the visual memory of objects and images is more efficient. Through this technique, the learners will gain what is named by Takac (2008) “Dual Encoding” by which they have linguistic and visual storing information. Object technique is the most reliable one for presenting new words to beginners and young learners especially with concrete terms (Alqahtani, 2015; Takac, 2008).

1.2.6.2. Translation

Translation is recognized by giving the equivalent item in L1 to the L2 one. This technique has a negative effect since the learners won't think about the words' meaning. However, it is useful and effective in teaching incidental vocabulary (Thornbury, 2002), checking the students' comprehension and marking out the similarities the similarities and differences between the first and the target languages that are likely to cause errors (Takac, 2008).

1.2.6.3. Guessing from the Context

By this technique, the teacher's role is having the learners accessing to multiple contexts of new word. Thus, the teacher creates different situations to use the item in several sentences with various contexts, then the learners will guess the meaning of the word they do not know (Takac, 2008; Alqahtani, 2015). In other words, the use of context to teach new vocabulary based on presenting the item in different situations in which the learners will guess the different meaning of the term. This technique is good for improving learners' motivates and self –confidence in guessing the meaning of new words and being familiar with them (Takac, 2008; Alqahtani, 2015).

1.2.6.4. Learners' Active Involvement

According to Takac (2008) through this technique the learners are encouraged to explore the words' meaning by Elicitation, I.e., list of words given to be memorized (Alqahtani, 2015). The results behind the integration of Elicitation in learners' active involvement are assimilated in maximizing the learners' speaking opportunities where they try to employ the words as it works as way for checking learners' understanding (Thornbury, 2002).

1.2.6.5. Defining the Meaning

Another technique used by teachers to present new vocabulary and to have learners acquire them is by defining them. The definition of words may take many forms like synonyms, antonyms, analytic definition, taxonomic definition, giving examples or the reverse...etc. In here, the teacher should present the definitions in simple and understood language (Takac, 2008).

In short, there are many teaching techniques which can be used to teach vocabulary in a creative and effective way. These techniques can be used in isolation or by mixing them to achieve the required objectives.

1.2.7. Vocabulary leaning Strategies

Language learning process cannot be occurring randomly. Contrariwise, it demands planned strategies. Learning strategies have been defined by many researchers. These latter have agreed that learning strategies are behaviors, actions or mental activities that language learners engage in to learn and to make language learning more successful, they may be conscious or unconscious (Ellis, 1995; Takac, 2008; Purpura, 1999). Specifically, Takac(2008, p.52) gives a precise definition of vocabulary learning strategies as they are specific strategies utilized in the isolated task of learning vocabulary in the target language.

Vocabulary learning strategies had been classified into different categories. Schmitt, 1997 (as cited in Schmitt, 2008) classifies VLSs into two main categories. The first category covers the strategies of discovery of a new words' meaning. While the second one is related to those for consolidating a word once it has been encountered.

The discovery strategies are used for initial discovery of new words. They are employed by the learners when they meet new terms. This category is divided into sub-categories called determination and social strategies. The first ones are based on discovery new words' meaning individually. They involve the use of dictionaries, guessing the meaning from context, analyze parts of speech and check for L1 cognate. Otherwise, the second ones based on the interaction with other people to improve language learning in which the learner may ask his teacher or classmates for definitions, paraphrase or translation... etc (Schmitt, 1997, as cited in Schmitt, 2008).

The consolidation strategies are used when the word is already introduced. This category includes social, memory, cognitive and meta-cognitive strategies. The social strategies are determined by consolidating vocabulary meaning in groups or with native speakers. Memory strategies (MEM) involve mental processing as relating the word meaning to previous knowledge like synonyms, antonyms or the use of keyword method. Memory strategies are the most effective for learning technical vocabulary related to a specific field of study. Cognitive strategies are like memory strategies. They focus on mechanical means to learn rather than focusing on mental processes. They involve verbal repetition, Keeping vocabulary notebook and written repetition. Finally, the meta-cognitive strategies are adopted by the learner is conscious of the learning process by making decisions, monitoring and evaluating his learning (Schmitt, 1997 as cited in Schmitt, 2008).

All in all, the use of vocabulary learning strategies makes the learning process more organized because the learner is aware of the progression of learning as they support independent and autonomy learning.

1.2.8. The Role of Cooperative Learning in Technical Vocabulary Learning

Vocabulary mastery is the most important element in learning a language. Its importance covers all what is necessary for the use of the language effectively. Generally, there are many methods and techniques used to teach new terms which focus more on individual instruction, I.e., the teacher follows individualistic instruction method in which the absence of grouping instruction is observed. As there is another kind of instruction method that based on having the learners work in groups. One of the latest methods is

called cooperative language learning in which the learners are engaged to accomplish shared learning goals. Through cooperative language learning the learner learns new terms and expressions from his/ her classmates. Vygotsky (1987, p. 90) states that “learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers.” In other words, learners prefer to work in groups in which their cognitive skills are developed more. Many studies prove the effect of using cooperative language learning in teaching technical vocabulary. According to Zohreh (2014) learners become more actively when they are engaged in technical vocabulary learning through cooperative language learning in which the experimental group showed a significant improvement than the control group that was taught technical vocabulary individually. Furthermore, Richard (1995, as cited in GÖMLEKS, 2007) argues that cooperative learning requires teachers to provide language support in terms of useful vocabulary so that students are able to succeed in the task. Accordingly, the study was carried out by GÖMLEKS (2007) gives a further evidence for the effectiveness of cooperative learning in teaching vocabulary to engineering students who learn English for specific purposes.

Conclusion

To conclude, vocabulary is the most important element in any language which demands a specific interest from both teachers and students. Vocabulary teaching/ learning occurs by applying different strategies and techniques. This chapter has shed light on the concept of vocabulary as well as one of the current approaches that may be used to teach such element which is cooperative language learning. Finally, the chapter ended with some evidence of the effectiveness of cooperative language learning in teaching technical vocabulary.

Chapter Two

Practical Framework

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Appendix

Resumé

ملخص

Introduction

The current study seeks to investigate the effectiveness of cooperative learning in mastering English technical vocabulary for biology students at Larbi Ben M'hide University.

This chapter is devoted to present the method used in this study, the sample, the research design, and the procedures of data collection. Then, it provides details about the data gathering instruments, the scores and the statistical analysis of the study.

2.1 Choice of the Method

An experimental method was adopted with a quasi-experimental design to fulfill the main aim of the study. The choice of the method depends on the nature of the topic of the investigation because it is a kind of cause-effect relationship between the independent variable (Cooperative Language Learning) and the dependant variable (Technical Vocabulary Learning), in addition to the random selection of the sample to generate the results on the whole population.

2.2 The Sample

The target population of the study is the first year LMD students of Biology department at Larbi Ben M'hide University for the academic year 2015-2016. The sample, which is randomly selected, consists of two preexisting groups to represent the whole population. Both groups contain twenty-five students of different age, gender, cultural background and intellectual capacities. We have selected first year because only at this level students are supposed to study English at the Biology Department.

2.3 Research Design

The present study is experimental with a quasi-experimental design which was carried out with two different groups. The experimental group is instructed in English technical vocabulary by following cooperative language learning methodology. Whereas, the control group followed the ordinary method in learning technical vocabulary in which the teacher translates the new terms from English to French and Arabic languages, as he asks the students to translate. Therefore, the present study consists of one independent variable (cooperative language learning) and one dependant variable (technical vocabulary learning).

In conducting this study, the following questions have been raised:

- ❖ Does cooperative language learning affect technical vocabulary learning of a group of learners in comparison with another group of learners not receiving CLL at the same level of proficiency?

In statistical terms:

- ❖ Is there any significant difference in vocabulary learning between students who are taught technical vocabulary through cooperative language learning and students who are taught technical vocabulary via the ordinary method?

To answer this question, the following hypothesis is proposed:

(H_1): There would be a significant difference in technical vocabulary learning between students who are taught via cooperative language learning, and those who are taught via the ordinary method.

The null hypothesis is stated as the following:

(H_0): There would be no significant difference in technical vocabulary learning between students who are taught via cooperative language learning, and those who are taught via the ordinary method.

In addition, since the method adopted in this study was quasi-experimental design, the research design can be summarized in the following table:

Table1: Research Design

Experimental Group	Pre-test	Treatment1	Post-test
Control Group	Pre-test	Treatment2	Post-test

Notes:

Experimental group: It consisted of 25 students

Control group: It consisted of 25 students.

Pre-test: it was composed of four different activities.

Treatment1: It was in the form of teaching technical vocabulary through cooperative language learning (Jigsaw I method).

Treatment2: It was in the form of teaching technical vocabulary using the translation technique.

Post-test: It was the same test used in the pre-test.

2.4 Procedure

2.4.1 Pre-testing

The pre-test was submitted to the experimental group and the control group during the first meeting through vocabulary exercises to measure the students' vocabulary level. The pre-test consists of four different technical vocabulary tasks that tackle different words related to cell biology. The time devoted to the pre-test was ninety minutes (90). Before starting the pre-test, the students were informed that the obtained scores on the test would not affect their scores on the examination in order to work individually.

2.4.2 Treatment

After finishing the pre-test, both the experimental and the control group had ninety minutes session per week during the period of the study. The experimental group received the lessons of the treatment by the researcher while the control group received the lessons by their teacher using the ordinary method.

2.4.2.1 Experimental Group Instruction

The experimental group was taught technical vocabulary through cooperative language learning (Jigsaw I) throughout four sessions. Most of the technical vocabulary that have been taught related to cell biology field.

During each session, students were provided with scientific text about the different elements of the cell and their functions followed by a list of activities.

The application of Jigsaw I method:

At the first session of the treatment, the students were divided into groups of five members, and they kept using the same groups till the end of the treatment. The principle of Jigsaw I method is assimilated in providing the teams with a text that contains different sections, and each team member is assigned a particular section. Then the students, who are working on the same section, meet in expert groups to discuss it. After that, they return to their groups to explain what they have learnt and then they answer the given activities together within their groups. The given texts were scientific and descriptive in nature; they tackled different parts of the cell and their functions. Moreover, the activities were varied (they were not the same form). The teacher task was assimilated in guiding, checking and assessing the groups' work.

2.4.2.2 Control Group Instruction

The control group members were taught technical vocabulary through the ordinary method followed by their teacher.

In each session, the students were provided with texts that were used with the experimental group to read it carefully. Then the teacher explained the text and the technical words that contains using the translation technique as a tool to help the students to understand the technical terms.

2.4.3 Post-testing

The post-test was administered in the last session (the sixth week) under the same conditions of the pre-test. The post-test was the same as the pre-test. The aim behind post-testing is to measure the improvement of the experimental group after being exposed to Jigsaw I as a method to teach technical vocabulary for four sessions of the treatment.

2.5 Instrument

2.5.1 Test Used in Pre-test and Post-test

The test used in the pre-test and post-test consisted of vocabulary exercises (Appendix A). It was administered to both experimental and control groups.

The test consists of four different exercises: matching, multiple choices, true- false and filling the gaps exercises. The aim behind including different tasks is to have an accurate assessment of the participants' vocabulary level. Since biology is a broad field, we decided to include English vocabulary which is related to the study of cells.

2.6 Scoring

As mentioned above, the test included four activities, and each activity is scored on five points. The following table presents the distribution of the scores among the activities and within each activity:

Table2: Scoring

Exercise	The Full Mark	The Detailed Mark
Activity One	Five Points	Right answer: 1 Wrong answer: 0

Activity Two	Five Points	Right answer: 1 Wrong answer: 0
Activity Three	Five Points	Right answer: 1 Wrong answer: 0 If the answer is True: 1 If the answer is False: ½ for the answer and ½ for the justification
Activity Four	Five Points	Right answer: ½ Wrong answer: 0

The same scoring was used in the pre-test and the post-test and the total score was 20.

2.7 Statistical analysis

On the basis of the research question, alternative and null hypotheses and the design of the study, two tests were used. The first one is called **t-test for independent samples** to compare the post-test of the experimental and control groups after the treatment period. While the second one is called **the paired sample t-test** which is used to determine whether there is a statistical significant difference between the sets of measures derived from the same participants (Phakiti, 2014). In other words, paired sample t-test is used to compare the pre-test and post-test of the experimental group after the treatment. In relation to our study, the paired sample t-test was used to investigate whether using cooperative language learning as an approach to teach English technical vocabulary improves the students' performance on the post-test in comparison with the pre-test.

The following section provides all the detailed analysis

2.8 Results

This section is devoted to the statistical analysis of the study. First, it presents the results obtained through the pre-testing and the post-testing of the participants. Then, it provides the analysis and the discussion of the research findings.

2.8.1 Results of Vocabulary Exercises

Table3: The Frequency of the Experimental and Control Groups' Scores on the Vocabulary Exercises.

Scores	Experimental Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
	Frequency	Frequency	Frequency	Frequency
6	1	-	-	-
7	-	-	2	-
8	-	-	2	4
9	1	-	3	3
10	2	-	2	6
11	7	1	5	4
12	2	4	5	2
13	5	1	2	3
14	2	3	2	1
15	-	6	2	1
16	5		-	1
17	-	2	-	-
18	-	6	-	-
19	-		-	-
20	-	2	-	-
	25	25	25	25

2.8.1.1 Experimental Group versus Control Group Scores on the Pre-test

Table3 shows that the experimental group has outscored the control group. The mean of the experimental group is $\overline{X}_E = 12.66$ while the mean of the control group is $\overline{X}_C = 11.36$.

For the total 50 scores, we have as follows:

Control Group:	$16 \geq 11 \rightarrow 64\% \geq 11$
	$9 < 11 \rightarrow 36\% < 11$
Experimental Group:	$21 \geq 11 \rightarrow 84\% \geq 11$
	$4 < 11 \rightarrow 12\% < 11$

Furthermore, the frequency of the experimental group's scores starts at 6 (the lowest score) and ends at 16 (the biggest score) with a peak at 11 (the most frequent score). However, the frequency of the control group scores' starts at 7 (the lowest score) and ends at 15 (the biggest score) with a peak at 11 and 12 (the most frequent scores).

2.8.1.2 Control Group Post-test versus Control Group Pre-test

From table3, the most frequent scores for the control group the pre-test are 11 and 12. While, the most frequent score in the post-test is 10.

For the total 25 scores, we have as follows:

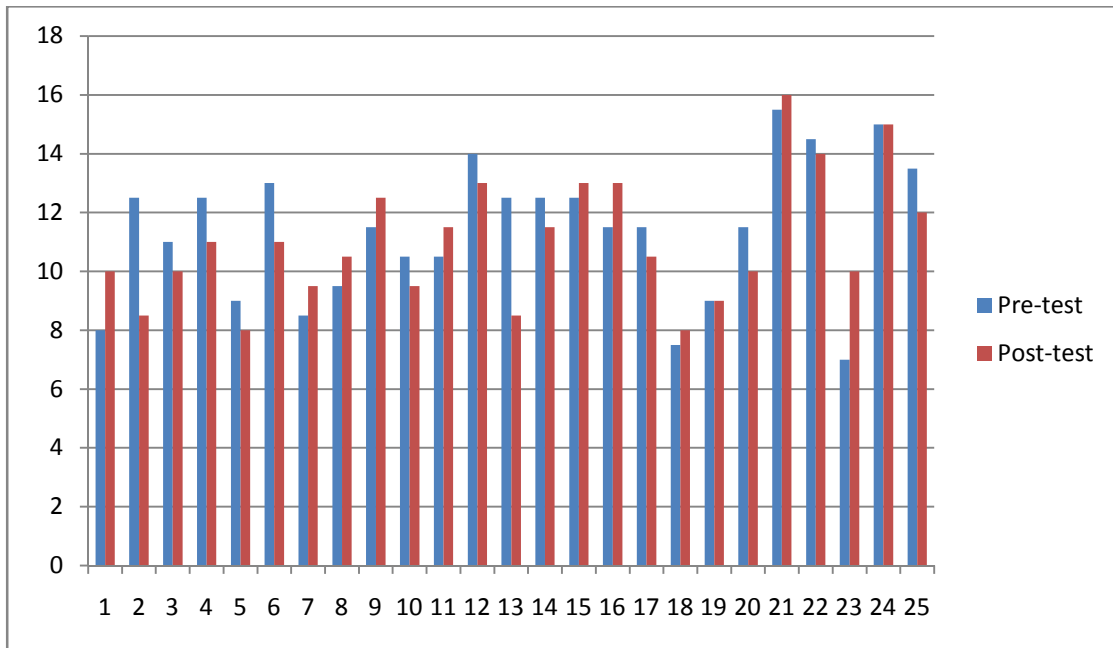
Pre-test	$16 \geq 11 \rightarrow 64\% \geq 11$
	$9 < 11 \rightarrow 36\% < 11$
Post-test	$7 \geq 11 \rightarrow 28\% \geq 11$
	$18 < 11 \rightarrow 72\% < 11$

For the control group, the mean recorded in the pre-test $\overline{X}_{CPr} = 11.36$ is higher than the mean obtained in the post-test $\overline{X}_{CPO} = 11.02$. To check whether there is an amelioration from the pre-test to the post-test scores of the control group, the difference between the pre-test and the post-test scores for each participant has been calculated (table4), and the mean difference scores was $\overline{d} = 0.34$. So, for the control group there were no improvement in the performance from the pre-test to the post-test and we can deduce that the technique used by the teacher (translation) during the treatment has no effect on students' technical vocabulary learning.

Table4: Control group's pre-test, post-test, and difference scores on vocabulary exercises

Individual Students	Pre-test	Post-test	Difference
01	8	10	+2
02	12.5	8.5	+4
03	11	10	+1
04	12.5	11	-1.5
05	9	8	+1
06	13	11	+2
07	8.5	9.5	-1
08	9.5	10.5	+1
09	11.5	12.5	+1
10	10.5	9.5	-1
11	10.5	11.5	+1
12	14	13	-1
13	12.5	8.5	-4
14	12.5	11.5	-1
15	12.5	13	+1
16	11.5	13	+2
17	11.5	10.5	-1
18	7.5	8	+1/2
19	9	9	0
20	11.5	10	-1.5
21	15.5	16	+1/2
22	14.5	14	-1/2
23	7	10	+3
24	15	15	0
25	13.5	12	-1.5
	$\overline{X}_{Pr} = 11.36$	$\overline{X}_{Po} = 11.02$	$\overline{d} = -0.34$

Figure4: Control Group's Scores on the Pre-test and Post-test



2.8.1.3 Experimental Group Post-test versus Experimental Group Pre-test

For the experimental group and as illustrated in table3, the most frequent score in the pre-test is 11, whereas the most frequent scores on the post-test are 16 and 18.

For the total 25 scores, we have as follows:

Pre-test: $21 \geq 11 \rightarrow 84\% \geq 11$

$4 < 11 \rightarrow 12\% < 11$

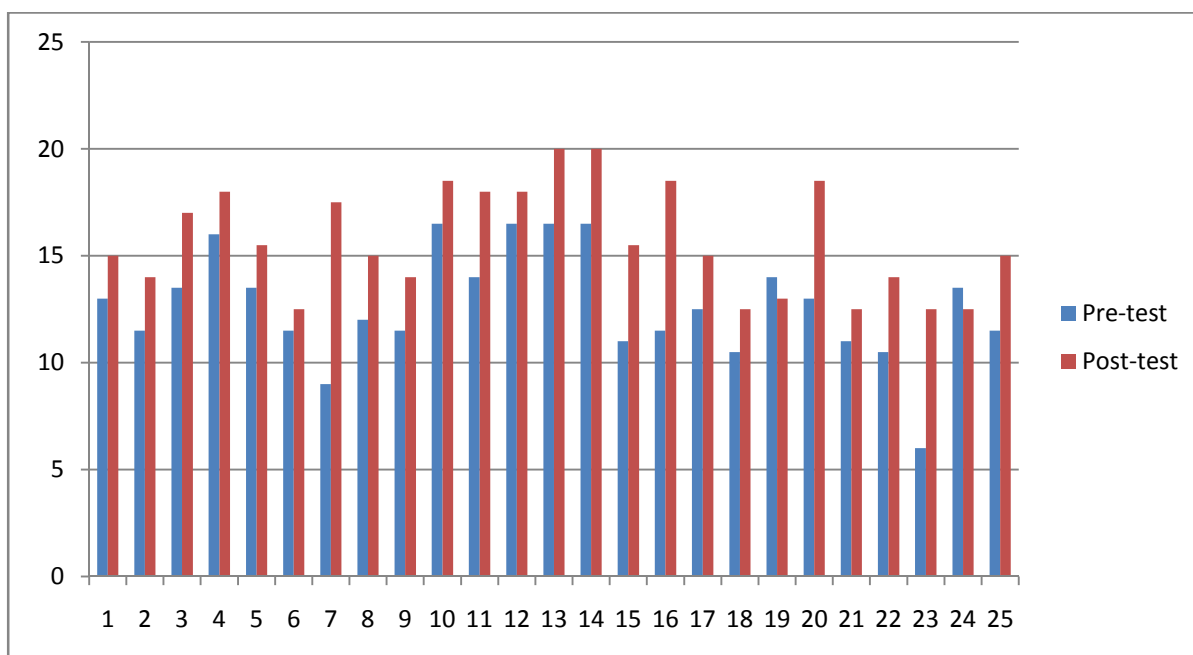
Post-test: $25 > 11 \rightarrow 100\% > 11$

Moreover, the experimental group mean obtained in the pre-test is $\overline{X_{pr}}=12.67$ and the mean recorded in the post- test is $\overline{X_{po}}=15.7$ and the mean difference $\overline{d}=3.03$ which indicate an upgrading from the pre-test to the post-test. So, for the experimental group there was an improvement in the pre-test performance in vocabulary exercises after being exposed to the treatment. In other words, the treatment used by the researcher (cooperative language learning) has an effect on participants' technical vocabulary learning.

Table5: Experimental group's pre-test, post-test, and difference scores on vocabulary exercise.

Individual Students	Pre-test	Post-test	Difference
01	13	15	+2
02	11.5	14	+2.5
03	13.5	17	+3.5
04	16	18	+2
05	13.5	15.5	+2
06	11.5	12.5	+1
07	9	17.5	+8.5
08	12	15	+3
09	11.5	14	+2.5
10	16.5	18.5	+2
11	14	18	+4
12	16.5	18	+1.5
13	16.5	20	+3.5
14	16.5	20	+3.5
15	11	15.5	+4.5
16	11.5	18.5	+7
17	12.5	15	+2.5
18	10.5	12.5	+2
19	14	13	-1
20	13	18.5	5.5
21	11	12.5	+1.5
22	10.5	14	+3.5
23	6	12.5	+6.5
24	13.5	12.5	-1
25	11.5	15	+3.5
	$\overline{X}_{Pr} = 12.66$	$\overline{X}_{Po} = 15.7$	$\overline{d} = 3.04$

Figure5: Experimental Group's Scores on Pre-test and Post-test



2.8.1.3.1 The Paired Sample t-test

According to Phakiti (2014), a paired sample t-test or repeated measures is used by the researcher to compare two tests ,i.e, the pre-test and the post-test of the experimental group after a treatment period.

The paired sample t-test is a test works on comparing the scores recorded from pre-test and post-test after the treatment period. The final results help to decide whether the difference between the pre-test and the post-test scores of the experimental group is caused by the independent variable (cooperative language learning) “the alternative hypothesis” or it is caused by chance “null hypothesis”. In other words, the outcomes of the paired sample t-test show if the difference is due to the effect of cooperative language learning.

To calculate the paired sample t-test, the following procedure should be followed:

1. Calculating the difference between each participant's pre-test and post-test score.
2. Calculating the mean difference
3. Calculating the standard deviation of the differences, S, and the standard error of the mean
4. Calculating the t-test, $t = \frac{\bar{d}}{SE_d}$
5. Using table of t-distribution at N-1 degree of freedom to find critical t-value
6. Comparing the t-value with critical t-value.

Table6: The experimental group's square difference scores on vocabulary exercises

Individual Student	Differences Scores d	Squre Difference Scores d^2
01	+2	4
02	+2.5	6.25
03	+3.5	12.25
04	+2	4
05	+2	4
06	+1	1
07	+8.5	72.25
08	+3	9
09	+2.5	6.25
10	+2	4
11	+4	16
12	+1.5	2.25
13	+3.5	12.25
14	+3.5	12.25
15	+4.5	20.25
16	+7	49
17	+2.5	6.25
18	+2	4
19	-1	1
20	5.5	30.25
21	+1.5	2.25
22	+3.5	12.25
23	+6.5	42.25
24	-1	1
25	+3.5	12.25
$\sum d = 76$		$\sum d^2 = 346.5$

The Mean Difference

$$\bar{d} = \frac{\sum d}{N}$$

\bar{d} = Difference mean, d= Difference scores, N= Number of the participants, \sum = Sum

$$\bar{d} = \frac{76}{25}$$

$$\bar{d} = 3.04$$

The Standard Deviation of the Differences

$$S_d = \sqrt{S^2} = \sqrt{\frac{\sum d^2}{N} - \bar{d}^2}$$

Where S= Variance and $\sum d^2$ = Sum of the squared difference scores

$$S_d = \sqrt{\frac{346.5}{25} - (3.04 \times 3.04)} = \sqrt{13.86 - 9.24} = \sqrt{4.61}$$

$$S_d = 2.14$$

Standard Error of the Mean Difference

$$SE(\bar{d}) = \frac{S_d}{\sqrt{N}}$$

$$SE(\bar{d}) = \frac{2.14}{\sqrt{25}} = \frac{2.14}{5}$$

$$SE(\bar{d}) = 0.42$$

The t-statistic

$$t_{N-1} = \frac{\bar{d}}{SE(\bar{d})}$$

$$t_{N-1} = \frac{3.04}{0.42}$$

$$t_{N-1} = 7.23$$

For the experimental group, the degree of freedom is calculated (df=N-1=25-1df=24) and by using the table of significance at the level of probability (p=0.01) the critical t-value is (2.49). Moreover, from comparing the critical t-value to the observed t it is found that the latter is higher than the former

$$t_{obs} > t_{cri} (7.23 > 2.49)$$

From the recorded results, it is concluded that the difference between the experimental group's scores on the pre-test and post-test is significant. Thus the null hypothesis is rejected and the obtained results are caused by the manipulation of the independent variable and not by chance. So, it can be claimed that using cooperative

language learning as an instructional approach has an effect on improving students' technical vocabulary learning.

2.8.1.4 Experimental Group versus Control Group on the Post-test

From table 3, the experimental group's scores on the post-test are higher than those of control group participants where $\overline{X}_E = 15.7$ is the mean of the experimental group and $\overline{X}_C = 11.02$ is the mean of the control group.

For the total 50 scores, we have as follows:

Control Group: $7 \geq 11 \rightarrow 28\% \geq 11$

$18 < 11 \rightarrow 72\% < 11$

Experimental Group: $25 > 11 \rightarrow 100\% > 11$

In addition, for the control group the frequency of scores starts at 7 and ends at 16 with a peak at 10 as the most frequent score, whereas, for the experimental group the frequency of scores starts at 11 and ends at 20 with a peak at 15 and 18 as the most frequent scores.

Importantly, the independent samples t-test has been used to investigate the significance of the difference between the experimental group's scores and the control group's scores.

2.8.1.4.1 The independent Samples t-test

The independent-samples t-test is one of the tests used to compare two means scores obtained by two different groups of participants. The aim behind using the independent-samples t-test is to determine whether there is a significant difference between the means scores of the experimental and control groups (phakiti, 2014). In other words, the independent-samples t-test is conducted to see whether or not the implementation of the independent variable (cooperative language learning) has an effect on the dependant variable (technical vocabulary learning).

Its formula is:

$$t_{N_1+N_2-2} = \frac{\overline{X_1} - \overline{X_2} \sqrt{(N_1+N_2)N_1N_2}}{\sqrt{(N_1S_1^2 + N_2S_2^2)(N_1+N_2)}}$$

X_n = individual scores

$\overline{X_n}$ = group mean

N_n = number of the participants

S_n = sample variance

$\sum X_x$ = sum of individual scores

$\sum X_n^2$ = sum of the square scores

Table7: Square post-test of both groups on vocabulary exercises

Students	Experimental group's scores X_1	Square scores	Control group's scores X_2	Square scores
01	15	225	10	100
02	14	196	8.5	72.25
03	17	289	10	100
04	18	324	11	121
05	15.5	240.25	8	64
06	12.5	156.25	11	121
07	17.5	306.25	9.5	90.25
08	15	225	10.5	110.25
09	14	196	12.5	156.25
10	18.5	342.25	9.5	90.25
11	18	324	11.5	132.25
12	18	324	13	169
13	20	400	8.5	72.25
14	20	400	11.5	132.25
15	15.5	240.25	13	169
16	18.5	342.25	13	169

17	15	225	10.5	110.25
18	12.5	156.25	8	69
19	13	169	9	81
20	18.5	342.25	10	100
21	12.5	156.25	16	256
22	14	196	14	196
23	12.5	156.25	10	100
24	12.5	156.25	15	225
25	15	225	12	144
$\sum X_1 = 392.5$		$\sum X_1^2 = 6312.75$		$\sum X_2 = 275.5$
				$\sum X_2^2 = 3150.25$

The Group Mean on the Post-test

Experimental Group:

$$\bar{X}_1 = \frac{\sum X_1}{N_1}$$

$$\bar{X}_1 = \frac{392.5}{25}$$

$$\bar{X}_1 = 15.7$$

Control Group:

$$\bar{X}_2 = \frac{\sum X_2}{N_2}$$

$$\bar{X}_2 = \frac{275.5}{25}$$

$$\bar{X}_2 = 11.36$$

The Sample Variance

Experimental Group:

$$S_1^2 = \frac{\sum X_1^2}{N_1} - \bar{X}_1^2$$

$$S_1^2 = \frac{6312.75}{25} - (15.7 \times 15.7)$$

$$S_1^2 = 252.51 - 246.49$$

$$S_1^2 = 6.02$$

Control Group:

$$S_2^2 = \frac{\sum X_2^2}{N_2} - \bar{X}_2^2$$

$$S_2^2 = \frac{3150.25}{25} - (11.02 \times 11.02)$$

$$S_2^2 = 126.01 - 121.44$$

$$S_2^2 = 4.57$$

The t-value

$$t_{N1+N2-2} = \frac{\bar{X}_1 - \bar{X}_2 \sqrt{(N1+N2-2)N1N2}}{\sqrt{(N1S1^2+N2S2^2)(N1+N2)}}$$

$$t_{25+25-2} = \frac{15.7-11.02 \sqrt{(25+25-2)(25 \times 25)}}{\sqrt{(25 \times 6.02+25 \times 4.57)(25+25)}}$$

$$t_{48} = \frac{4.68 \sqrt{48 \times 625}}{\sqrt{(150.5+114.25)50}}$$

$$t_{48} = \frac{4.68 \sqrt{30000}}{\sqrt{264.75 \times 50}}$$

$$t_{48} = \frac{4.68 \times 173.2}{\sqrt{13237.5}}$$

$$t_{48} = \frac{810.6}{115.05}$$

$$t_{48} = 7.04$$

The total number of both experimental and control groups members is 50, the degree of freedom ($df=N-2=50-2$ $df=48$) and when entering a t-table at 48 degrees of freedom, we find a critical t-value of 2.67 at the 0.01 level of significance. So, the observed t-value is higher than the critical t-value.

$$t_{obs} > t_{cri} (7.04 > 2.67)$$

Therefore, there is a significant difference between the experimental and control groups' post-test means. From the obtained results the null hypothesis is rejected and the alternative hypothesis is accepted. Finally, it can be claimed that the use of cooperative language learning has an effect on biology students' technical vocabulary learning.

General Discussion

The present study was conducted to test the effectiveness of cooperative language learning in teaching technical vocabulary. This study examined the hypothesis:

The students who are taught technical vocabulary through cooperative language learning would significantly improve their technical vocabulary level than those who are taught technical vocabulary through the ordinary method.

The analysis of the results showed that the experimental group outperformed the control group on the post-test and this significant difference is caused by the manipulation of cooperative language learning during the treatment period. So, the aforementioned hypothesis is supported.

Non Significant Improvement for the Control Group

The findings of this study showed that the method followed by the teachers to teach technical vocabulary to the control group did not bring about any significant improvement in the learners' technical vocabulary since they failed in answering correctly the vocabulary activities on the post-test. So, the method used by the teachers is not effective for long-term learning of technical vocabulary. Since they did not show any improvement compared with the experimental group.

Significant Improvement for the Experimental group

The finding of the present study support the use of cooperative language learning as an alternative approach to the traditional one (translation) for teaching technical vocabulary to biology students at Larbi Ben M'hidi University. This claim is based on the fact that the ordinary method did not bring about a significant improvement in the learners' technical vocabulary when compared with those who received their lessons through cooperative learning. By nature, learning in groups could help the learners to motivate each other as it makes them more confident and enthusiastic about sharing their ideas and thoughts with other members of the group.

General Conclusion

The aim of the study is to investigate the effectiveness of cooperative language learning in enriching students' technical vocabulary. The obtained results of the experimental group on the post-test show a significant improvement. This improvement is due to the use of cooperative language learning. Therefore, the findings prove that students who have been exposed to cooperative learning improve their technical vocabulary. That is to say, the implementation of cooperative language learning is considered as an effective instructional approach to be used when teaching new technical vocabulary. Hence, the ESP teachers should integrate CLL approach with the ultimate goal of improving students' technical vocabulary, and they use learner centered-approach rather than teacher centered-approach.

Pedagogical Recommendation

The present study proves the positive effect of cooperative language learning on enhancing students' technical vocabulary. Thus, it is recommended for ESP teachers to apply such approach to instruct new technical vocabulary. In fact, most of the ESP teachers are following individualistic instruction to teach subject-related vocabulary in which the cooperative learning is neglected. Moreover, they implement group learning in which the cooperation between the group members is not guaranteed. Besides, this kind of learning group is less organized than cooperative one. Furthermore, it would be better if the cooperative learning is supported with different techniques of vocabulary learning such as using objects as an additional aid.

Limitation of the Study

When conducting the present study, the constraint that we have encountered is the time. It was only four sessions of the experiment. It would be better results if it took the sufficient time. Therefore, the results of the experiment are influenced by the limited span of time.

Suggestions for Further Researches

The present study has shed light on the effectiveness of cooperative learning on enriching technical vocabulary which deserves further researches. It would be more interesting to deal with such topic by investigating the teachers' and students' perceptions towards the use of CLL in teaching technical vocabulary. Furthermore, it is suggested to deal with such kind of learning groups in the acquisition of the most important skill which is "writing" using an experimental method. The main aim behind such suggestion is to adopt an effective approach to teach technical vocabulary and language skills.

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Appendix A

Test Used in Pre-test and Post-test

Exercise one: Match each word/item with its definition

1. The process by which green plants turn carbon dioxide and water into food using energy obtained from the sun light.
2. The process of cell divisions in two stages that result in four cells each with half the number of chromosomes of the original cell.
3. A substance produced by all living things which help a chemical change happens without being changed itself.
4. The process of producing on exact copy of an animal or plant from its cells.
5. A substance that the body produces in the blood to fight any strange substances that enter to the body.

a. Enzyme

b. Meiosis

c. Clone

d. Photosynthesis

e. Anti-body

Exercise two: Choose the correct answer

1. A kind of cells that carries information within the brain and between the brain and other parts of the body.
 - ❖ Chromosome
 - ❖ Neuron
 - ❖ Stem cell
2. A long thin part of a nerve cell long whose signals are sent to other cells.
 - ❖ Axon
 - ❖ Vesicle
 - ❖ Ovum
3. The sequence of events involved in the development of a species or taxonomic group of organisms.
 - ❖ Fossil

- ❖ Respiration
 - ❖ Evolution
4. A chemical substance produced in the body (by an organ) that encourages growth or influences the cells and tissues function.
- ❖ Enzyme
 - ❖ Hormone
 - ❖ Amino-acid
5. One of the very small structures in the nuclei of animal or plant cells that contains genes.
- ❖ Chromosome
 - ❖ Chloroplast
 - ❖ Genetic-code

Exercise three: Say whether the following statement are true or false . Correct the false one

1. Chloroplast is the structure in plants cells that contains chlorophyll and in which photosynthesis takes place:
-
-
2. Protein is a natural substance which cannot be dissolved in water
-
3. Killer cell is a white blood cell which destroys infected cells or cancer cells:
-
4. Mitochondrion is a unit inside a cell which controls a particular quality in a living thing that has been passed on from its parents:
-
5. DNA ; deoxyribonucleic Acid which is existed in the cells that carries genetic information and it is a type of nucleic acid :
-

Exercise four: Fill the gaps with the appropriate word

Organelles – death – microscopic – cell – physiological – life cycle – molecular –
division - multi-cellular - cells

Cell biology is an academic discipline that studies, their
.....properties; their structure ; thethey contain ; interaction
with their environment ; their;..... Andthis is done on
a and level.

..... biology research encompasses both the great diversity of single-celled
organisms like bacteria and protozoa as well as the many specialized cells in
..... organisms like humans.

Appendix B

Texts Used in the Treatment

Text One: The cell

The stages in a cell's life are called the **cell cycle**. This works a bit like a washing machine cycle- each stage must be finished completely before the next one is allowed to start. Instead of wash, rinse, spin and drain, the cell cycle is made up of stages in which the cell grows and rests, copies its **DNA** and divided into two new cells.

There are many different sorts of cells but all have roughly the same cell cycle. However, the time taken to complete it can vary enormously. The cell cycle of a fly **embryo** cell takes only eight minutes while a human liver cell cycle can last longer than a year. Some cells can withdraw from the cell cycle and rest before re-entering it. Many cells in growing embryos often skip the resting stages altogether. Cells that have stopped dividing, like **brain cells**, never re-enter the cell cycle.

Almost every one of your cells has a set of **genes**, made of **DNA**, which are instruction for making **proteins**. The 6000million letters of DNA code in your cells is coiled up as 46 bundles-chromosomes. Before cell can divide it must unravel its **chromosomes** and copy its entire DNA, so that each new cell will get a complete copy. On average, this whole process takes just seven hours. Once it has copied all its DNA, a cell normally divides into two new cells. This process is called **mitosis**. Each new cell gets a complete copy of the entire DNA, bundled up of 46 **chromosomes**. Cells that are making ovum or sperm cells must divide in a different way. Each ovum and sperm cell ends with only half the amount of DNA present in the original cell, bundled up as 23 chromosomes. This special way of dividing is called **meiosis**.

When a cell divides to make **ovum** or **sperm** (meiosis), the two **chromosomes** in each pair become closely **entwined** round each other. During this time, they swap parts of themselves. This process, called **recombination** or "crossing over", shuffles genetic information- two stretches of **DNA** that were near each other on one chromosome may end up in different **ovum** or **sperm** cells. Recombination ensures that every individual contains a unique set of genetic information.

Text Two: Animal Tissues

Grouped into four basic types : connective, muscle, nervous, and epithelial. Multiple tissue types compose organs and body structures. While all animals can generally be considered to contain the four tissue types, the manifestation of these tissues can differ depending on the type of organism. For example, the cells comprising a particular tissue type may differ developmentally, for different classifications of animals.

The epithelium in all birds and animals is derived from the ectoderm and endoderm with a small contribution from the mesoderm, forming the endothelium, a specialized type of epithium that composes the vasculature. By contrast, a true epithelial tissue is present only in a single layer of cells held together via occluding junctions called tight junctions, to create a selectively permeable barrier. This tissue covers all organismal surfaces that come in contrast with the external environment such as the skin, the airways, and the digestive tract. It serves functions of protection, secretion, and absorption, and is separated from other tissues below by basal lamina.

Text Three:

Biology is divided into three great kingdoms: Eubacteria, Archaea and Eukaryota. Bacteria (Eubacteria and Archaea) are ubiquitous in the environment, and these small single-celled organisms grow over an amazingly wide range of environmental conditions. For example, bacteria can grow at temperatures below freezing, and certain members of the archaea can grow at depths of over three miles and at temperatures exceeding 600°F and 200 atmospheres of pressure. Eukaryotes, which include the more conspicuous fungi and all plants and animals, are usually recognized

as the predominant life forms on earth. They are subjects of great biological interest and they differ from bacteria by having a larger cell size and by compartmentalizing chromosomal deoxyribonucleic acid (DNA) in a nucleus, which separates it from the protein-making cytoplasm. None the less, considering the large cell numbers and wide environmental growth ranges, bacteria easily account for the majority of DNA biomass on earth.

The chromosome is the heart of a central paradox in evolution. How do species in the three kingdoms remain the same over long periods of geological time and also generate sufficient variability to produce new species, sometimes relatively rapidly? Stability versus change is a crucial dichotomy in molecular biology. The events that bring about stability and change in DNA structure involve processes of replication, transcription and recombination. Similar mechanisms operate in the three living kingdoms, but the key molecular mechanisms that control and catalyse these events are understood best in a eubacterium: *Escherichia coli*.

Chromosome Size

Free-living bacteria need genetic information to synthesize proteins for executing vital functions. Most bacteria have a single chromosome with DNA that is about 2Mbp (megabase pairs) long (1Mbp=1000 000 base pairs), but the DNA content of different species varies from 0.58 to greater than 9Mbp of DNA, and some bacteria have multiple chromosomes. For example, *Leptospira* has two chromosomes of 4.4 and 4.6Mbp and the largest bacterial genome yet analysed is that of *Myxococcus xanthus*, with 9.2Mbp (9 200000bp). However, the best studied organism in nature is *E. coli*, which has a 4.6-Mbp chromosome with 4288 genes for proteins, seven operons for ribosomal ribonucleic acids (RNAs), and 86 genes for transfer RNAs.

The *E. coli* chromosome contains numerous gene families, each family having evolved from a common ancestor. The largest gene family is comprised of 96 three-component (ABC) transporters, which are membrane-bound machines that import and export a variety of small molecules and proteins. By contrast, the smallest free-living organism is *Mycoplasma genitalium* with a 0.58-Mbp genome that encodes 468 protein genes, one ribosomal RNA operon and one ABC transporter. Both *E. coli* and *M. Genitalium* have complete information for the synthesis of cell walls, cell membranes and critical enzymes of intermediary metabolism, plus the RNA molecules, ribosomal proteins and a clutch of enzymes (the replisome) to replicate

DNA efficiently. Putative functions for about a quarter of the genes of *E. Coli* remain to be discovered. A reasonable estimate is that 150–200 protein-encoding genes would be ‘essential’ for a basic bacterial lifestyle (in a rich medium).

Eukaryotic organisms generally have larger chromosomes than bacteria. For example, the yeast *Saccharomyces cerevisiae* has about 6000 genes (50% more than *E. coli*), whereas mammalian cells contain 1000 times (per haploid equivalent) the DNA of an *E. coli* cell. In humans the 5000 Mbp of haploid DNA is distributed among 22 autosomes and two sex-specific chromosomes. Eukaryotic DNA is localized in a compartment, the nucleus, which is separated by a phospholipid-containing membrane from cytoplasmic ribosomes and protein translation activity. During cell division, the eukaryotic nuclear membrane breaks down once per cell cycle to

Text Four: The Virus

A virus is a small infectious agent that replicates only inside the living cells of other organisms. Viruses can infect all types of life forms, from animals and plants to microorganisms, including bacteria and archaea. The origins of viruses in the history of life: some may have evolved from plasmids (pieces of DNA that can move between cells) while others may have evolved from bacteria. In evolution, viruses are an important means of horizontal gene transfer, which increases genetic diversity. Viruses are considered by some to be a life form, because they carry genetic material, reproduce, and evolve through natural selection. However, they lack key characteristics (such as cell structure) that are generally considered necessary to count as life. Because they possess some but not all such qualities, viruses have been described as organisms at the edge of life. Specifically, the human immunodeficiency virus (HIV) is a lentivirus (a subgroup of retrovirus) that causes HIV infection and acquired immunodeficiency syndrome (AIDS). AIDS is a condition in humans in which progressive failure of the immune system allows life-threatening opportunistic infections and cancers to thrive. Without treatment, it is estimated to be 9 to 11 years, depending on the HIV subtype, before death. HIV is transmitted through contact with blood, fluid, pre-ejaculate or breast milk. Within these bodily fluids, HIV is present as both free virus particles and virus within infected immune cells.

Resumé

L'apprentissage d'une langue est très compliqué parce qu'elle compte sur l'acquisition de vocabulaire. Ce dernier a un rôle principale chez les apprenants de la langue anglais comme une langue étrangère et chez les apprenants de la langue anglais pour spécifique objectives. L'enseignement et l'apprentissage du vocabulaire est un provocation difficile pour les enseignants pour choisir la méthode et la technique qui est efficace pour réaliser les objectives, aussi les apprenants souffrent de l'acquisition permettant du vocabulaire. Le but de cette étude est de faciliter ce processus par tester l'efficacité d'une méthode sur l'acquisition des mots technique qui s'appelle l'enseignement coopérative. Elle s'appuyé sur une méthode de conception quasi-expérimentale. L'échantillon sélectionné pour l'étude de ce sujet est composé de 50 étudiants en première année de biologie a l'Universités de ARBI Ben M'hidi a Oum El bouaghi, separees en deux groupes, le groupe expérimentale et le groupe témoin. Les deux groupes ont été soumis au même teste qui consistait a quatre activités du vocabulaire. Puis, les deux groupes sont reçu quatre séance de traitement-coopérative méthode pour le group expérimentale et traditionnel méthode pour le groupe témoin (traduction). Suite a cela, les deux groupes ont du repasser le teste initial pour voir si leur niveau s'est amélioré. Le résultat de cette étude supporte l'utilisation de la méthode coopérative pour faciliter l'apprentissage du vocabulaire technique.

ملخص

ان تعلم اللغة يعد عملية بالغة التعقيد كونها تقتصر على اكتساب المفردات هذه الاخيرة تلعب دورا هاما لدى متعلمي اللغة الانجليزية كلغة اجنبية , ومتعلمي اللغة الانجليزية المتعلقة بالتخصص. ويمكن القول ان تعلم وتعليم المفردات يعد تحد للمعلمين وهذا راجع الى اختيار المنهجية والتقنية المناسبة لتحقيق الاهداف المرجوة , ويصبح تعليم المفردات عملية اشد تعقيدا عندما يكون تدريس اللغة الانجليزية عند غير المتخصصين فيها اين يواجه المتعلمون صعوبات في تعلم واكتساب المفردات المتعلقة بمجال التخصص هذا الى جانب صعوبة استرجاع هذه المفردات حين الحاجة اليها. من هذا المنظور فان هذه الدراسة تهدف الى تسهيل عملية تعلم المفردات اعتمادا على منهجية التعليم التعاوني. و للتحقق من فعالية هذه المنهجية في تدريس المفردات التقنية فقد طبق المنهج التجريبي بتصميم شبه تجريبي. العينة المختارة للدراسة لأجل هذه الدراسة مؤلفة من خمسين طالبا من قسم العلوم الطبيعية والحياة جامعة العربي بن مهيدي ام البواقي قسموا الى فوجين الاول فوج تجريبي والثاني ضابط. اثناء اللقاء الأول تم اجراء اختبار قبل التجربة يتضمن اربعة تمارين مختلفة خاصة بالمفردات لغرض تحديد مستواهم المعرفي بالمفردات الخاصة بميدان دراستهم. بعد ذلك تم تقديم معالجة خاصة لكلى الفوجين اين اتبع الفوج الضابط المنهج التقليدي (الترجمة) في حين اتبع الفوج التجريبي منهجية التعليم التعاوني في تدريس المفردات التقنية. بعد فترة المعالجة اجري اختبار بعد التجربة الذي كان نفس الاختبار المستعمل قبل التجربة و ذلك لتقييم مدى تحسن مستواهم. ان نتائج هذه الدراسة تشجع على اتباع منهجية التعليم التعاوني كوسيلة ناجعة في تدريس المفردات التقنية.