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The Impact of Cognitive Academic Language Learning Approach (CALLA) On EFL Preparatory School Students' in Creative Thinking

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Abstract

Creative Thinking plays a crucial role for both teachers and students. Accordingly, the current study aims at finding out the impact of Cognitive Academic Language Learning Approach (CALLA) on EFL preparatory school students' creative thinking. It is hypothesized that there are no statistically significant differences at the level of significance (0.05) in the mean creative thinking among the mean scores of students' achievement between the experimental group taught by the Cognitive Academic Language Learning Approach (CALLA) and that of the control group receiving traditional instruction in creative thinking posttest. To verify the hypothesis of the study and achieve its aims, a quasi-experimental nonrandomized control group, pretest-posttest design is employed. Two groups are randomly selected from the fifth preparatory class in Amouriya Preparatory School for Girls to represent the sample of the study which is 60 students (30 students for each group). Both groups are subjected to the same pretest to ensure equivalence between them. Then the experimental group is taught according to the Cognitive Academic Language Learning Approach (CALLA), whereas the control group is taught according to the method stated in the Teacher's Book. After achieving the validity of the test, a pilot study is conducted on 25 students of the fifth preparatory class. Then the both groups are subjected to the same posttest in creative thinking. Data have been analyzed statistically. The results have shown that there is a statistically significant difference between the experimental and the control groups. In the light of obtained results, conclusions, recommendations and suggestions for further studies are put forward.

Keywords: *Cognitive, Learning Strategies, Academic, Creative Thinking, Approach*

1. Theoretical Background

1.1 Cognitive Academic Language Learning Approach (CALLA)

It is an instructional model for second and foreign language learners based on cognitive learning theory and research which integrates content with language improvement and explicit learning strategy instruction (Chamot and O'malley, 1994). Anna Chamot and Michael O'malley are the designers of the CALLA model which infuses content and language learning together in rigorous language learning environments. The CALLA model utilizes the discourse features (that means patterns in the language) of academic texts to inform teachers' choices in language objectives (Reynolds, 2015). The goals of CALLA are for students to learn essential academic content and language and to become independent and self-regulated learners through their command over a variety of strategies for learning. It focuses that learners should mentally participate in the interactive teaching-learning activities featured by applying prior knowledge to the new problem

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solving, searching for meaning in new information, in-depth thinking, and developing capabilities for regulating one's own learning (Chamot and Robbins, 2006).

According to Horwitz (2020). CALLA is a widely used method for teaching language through content. It focuses on the dual nature of learning in content-based language instruction (where learners need to develop both academic concepts and academic language) and accordingly, it is based on a hybrid cognitive learning and sociocultural theory of SLA. CALLA has been designed to develop English skills through content learning and is made up of 3 components:

1. The instructional topics are chosen from major academic subjects and topics which can spark the students' interests.
2. Instruction focuses on the development of academic language literacy.
3. There is explicit instruction in both content and learning strategies. The explicit instruction in language learning strategies helps students in becoming active learners who mentally analyze and reflect on their learning (Chamot et al., 1999). Through the use of language learning strategies, students are able to learn and apply the strategies to all types of learning situations. The three types of language learning strategies include that target metacognitive processes, those that deal with cognitive aspects of learning, and those that address social and effective skills (Chamot and O'malley, 1994). These three components are described and explained in details next subsections.

O'malley and Chamot (1990) explain that the CALLA is designed to develop the academic language skills of limited English Proficient students (LEP) in upper elementary and secondary schools and that CALLA is intended to meet the academic needs of three types of LEP students:

1. Students who have developed social communicative skills through beginning level ESL/EFL classes or through exposure to an English-speaking environment, but they have not yet developed academic language skills appropriate to their grade level.
2. Students who have acquired academic language skills in their native language and initial proficiency in English, but who need assistance in transferring concepts and skills learned in the first language to English.
3. Bilingual English-dominant students who have not yet developed academic language skills in either language.

1.1.2 The Components of CALLA

The CALLA model includes three components that are topics from the major content subjects, development of academic language skills, and instruction in learning strategies for both content and language (O'malley and Chamot, 1990). Despite the fact that these three components are not separated during instruction, it is described each in turn before describing how they are integrated in CALLA lessons.

1.1.2.1 The Content-based Curriculum

The CALLA emphasizes the use of language functionally as a tool for learning academic subject matter. Academic language skills, such as listening and reading for information and speaking and writing about new knowledge, may or may not have been improved in the first or the target language. Students may either need instruction on how to transfer previously learned language skills to English or may need to learn academic language skills for the first time

(O'malley and Chamot,1990). The students need to concentrate on academic language that includes contents, vocabulary, discourse structures of a variety of disciplines, the knowledge of the difference between social and academic language and how each interacts with the difficulty of the task can help teachers plan suitable activities to develop academic language (Aukrust, 2011).

Academic language may be difficult for LEP students to acquire depending on two dimensions that can be used to describe the language demands faced by both LEP and native English-speaking students. The first dimension concerns the context in which language tasks place, and the second dimension concerns the cognitive complexity of the task (Chamot,2009). Language that is most comprehensible takes place in contexts rich in nonverbal and paralinguistic cues such as concrete objects, gestures, facial expressions, visual aids, and vocal intonation and stress markings whereas language is least comprehensible when these context clues have been reduced. Concerning task complexity, when the cognitive demands of a task are high, comprehension is more difficult (O'malley and Chamot, 1990). Language tasks such as concrete vocabulary learning, following oral directions, and classroom discussions about different topics in the students' own experience are seen to be low in cognitive demands, whereas tasks such as acquiring new information through reading and listening, or speaking or writing about academic topics, are thought to be high cognitive demand (Chamot, 2009). Both contextualized and decontextualized language are present in a typical classroom where teachers are aware that not all of class time is spent on cognitively demanding tasks (Horwitz, 2020).

O'malley and Chamot (1990) explain that context-reduced language is generally associated with literacy skills, but oral language can also vary along the context-embedded to content-reduced continuum. LEP students can begin improving academic language skills in English through cognitively demanding activities in which comprehension is assisted by contextual support. Content-based language activities provide opportunities for LEP students to develop the academic language proficiency in English that will help them be more successful in mainstream classrooms. Horwitz (2020) exhibits that CALLA teachers assist this development by including in their classes materials and concepts drawn from the content areas. CALLA teachers conduct class in the target language ensuring that both the content and language can be comprehensible to students. In CALLA, academic language is developed through a whole language approach in which all language skills are applied and integrated for all content areas of the curriculum.

1.1.2.2 Academic Language Development

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1.1.2.3 Learning Strategies Instruction

The third and central component in the CALLA model is instruction in learning strategies. According to O'malley and Chamot (1990) the use of learning strategy instruction as a methodological approach in CALLA is based on four important propositions:

1. *Mentally active learners are better learners.* Students who can organize new information and relate it to existing knowledge have more cognitive linkages to aid comprehension and recall than do students who approach each new task as something to be memorized by rote learning.

2. *Strategies can be taught.* Students who are taught to use strategies and are practiced to use them can learn more effectively than students who have had no experience with learning strategies.
3. *Learning strategies transfer to new tasks.* Once students have become accustomed to using learning strategies, they will use them on new tasks that are similar to the learning activities on which they have trained.
4. *Academic language learning is more effective with learning strategies.*

The CALLA model suggests that in the explicit instruction of learning strategies, teachers should approach the instruction through preparation of the strategy, practice opportunities, evaluation of students' abilities to utilize the strategy and expansion (Reynolds, 2015). These five stages are explained and described next subsections. Chamot (2009) points out that good language learners use a variety of LS to assist them understand and remember new information, whereas less effective learners have fewer strategies and apply them infrequently or inappropriately.

Based on what O'malley (1985) and Chamot and O'malley (1987) propose, LS can be classified into three types:

- Metacognitive strategies, which involve executive processes in planning for learning, monitoring one's comprehension and production, and evaluating how well one achieves a learning objective. Beyer (1987) defines metacognitive strategies with three processes that are planning, monitoring, and evaluation.
- Cognitive strategies, in which the learner interacts with the material to be learned by manipulating it mentally (as in making mental images, or elaborating on previously acquired concepts or skills) or physically (as in grouping items to be learned in meaningful categories, or taking notes on important information to be remembered) (O'malley and Chamot, 1990).

- Social/affective strategies, in which the student either interacts with another person in order to help learning as in cooperation or asking questions for classification, or uses some kind of affective control to aid a learning task (Reynolds, 2015). Table (1) describes LS taught in the CALLA model.

Table (1) Learning Strategies Taught in the CALLA

Metacognitive Strategies	
Advance organization	Previewing the main ideas and concepts of the material to be learned, often by skimming the text for the organizing principle.
Advance preparation	Rehearsing the language needed for an oral or written task.
Organizational planning	Planning the parts, sequence, and main ideas to be expressed orally or in writing.
Selective attention	Attending to or scanning key words, phrases, linguistic markers, sentences, or types of information.
Self-monitoring	Checking one's comprehension during listening or reading, or checking one's oral or written production while it is taking place.
Self-evaluation	Judging how well one has accomplished a learning task.
Self-management	Seeking or arranging the conditions that help one learn, such as finding opportunities for additional language or content input and practice.
Cognitive Strategies	
Resourcing	Using reference materials such as dictionaries, encyclopedias, or textbooks.
Grouping	Classifying words, terminology, numbers, or concepts according to their attributes.
Note taking	Writing down key words and concepts in abbreviated verbal, graphic, or numerical form.
Summarizing	Making a mental or written summary of information gained through listening or reading.
Deduction	Applying rules to understand or produce language or solve problems.
Imagery	Using visual images (either mental or actual) to understand and remember new information of a problem.
Auditory representation	Playing in back of one's mind the sound of a word, phrase, or fact in order to assist comprehension and

	recall.
Elaboration	Relating new information to prior knowledge, relating different parts of new information to each other, or making meaningful personal associations with the new information.
Transfer	Using what is already known about language to assist comprehension or production.
Inferencing	Using information in the text to guess meanings of new items, predict outcomes, or complete missing parts.
Social and affective Strategies	
Questioning for clarification	Eliciting from a teacher or peer additional explanation, rephrasing, examples, or verification.
Cooperation	Working together with peers to solve a problem, pool information, check a learning task, or get feedback on oral or written performance.
Self-talk	Reducing anxiety by using mental techniques that make one feel competent to do the learning task.

1.1.3 Cognitive Theory

Chamot (1995) interprets that CALLA is based on cognitive learning theory which assumes that learners are mentally active participants in the learning-teaching process. The mental actions of learners are featured by the function of using prior knowledge to solve new problems, searching for meaning in received information, higher level thinking, and the developing ability to monitor the students' own learning. Aukrust (2011) adds that all processes of thought whether they are conscious or unconscious fall into the realm of cognition and these mental processes operate by manipulating information-laden mental representations, which are either retrieved from memory or constructed from sensory information. Thus, the mind can be understood as an information processor, continuously adding to its repertoire of mental representations as well as producing overt physical behaviours. O'malley and Chamot (1990) clarify that an important concern of understanding of second or foreign language acquisition is the operation of transfer of both declarative and procedural knowledge from the first to the second language and the effect of cultural experiences on the development of different types of schemata, and the ease or difficulty with which a culturally influenced story grammar, event structure, or discourse organization schema may accommodiate new information of this type learned in the second language. The CALLA instructional framework addresses these transfer issues and we can distinguish between linguistic transfer and elaboration of prior nonlinguistic knowledge, and teach both as important strategies that students can use to help their own learning.

1.1.4 Language Learning Strategies

The CALLA model advocates the explicit instruction of learning strategies (Reynolds, 2015). Language learning strategies LLS are the mental and communicative procedures learners use in order to learn and use language (Nunan, 1999). Oxford (1990) defines LLS as " specific actions, behaviours, steps, or techniques that students use to improve their own progress in developing

skills in a second or foreign language" (p. 518). Schmitt (2002) declares that LLS are conscious and semi-conscious thoughts and behaviours used by the learners with the explicit goals of improving their knowledge and understanding of a target language. Anderson (2005) agrees with Schmitt that strategies are the conscious actions that learners take to improve their language learning. Reynolds (2015) states that learning strategies are plans or procedures a learner uses to learn something new or solve a learning problem, and it is a general term for a wide variety of tricks that learners employ to remember, learn and figure out new information.

1.1.5 CALLA Lesson Plan Model

The CALLA lesson plan framework incorporates learning strategy instruction, content area topics, and language development activities. Learning strategy instruction is both direct and embedded. In CALLA lesson, new learning strategies are introduced and familiar ones are practiced. (Chamot and O'malley, 1994). To implement the CALLA model, a teacher could start by evaluating students' background knowledge on the content and language objectives. The teacher would identify what each student might know the topic and students' strengths and needs in speaking, listening, reading and writing, grammar and vocabulary. From this needs analysis, the teacher would map out reasonable content, language and language strategy objectives for the lesson and identify which materials could be supportive of the learners' comprehension. In theory, all three types of objectives would overlap and enhance the others (Reynolds, 2015).

CALLA lesson involoves both teacher-directed and learner-centered activities. Three types of objectives are specified which are content objectives, language objectives, and learning strategies objectives. Each CALLA lesson is divided into five phases: preparation, presentation, practice, evaluation, and expansion activities. These phases are often recursive in that the teacher may want to go back to earlier phases so that he/she can clarify or supply additional instruction (O'malley and Chamot, 1990).

The following description of each phase indicates how content topics, academic language skills, and learning strategies can be developed in a CALLA lesson:

1. **Preparation**

In the preparation phase of the lesson, the teacher finds out, usually through brainstorming, what students already know about the concepts in the subject area to be presented and practiced, what gaps in prior knowledge should be addressed, and how students have been taught to approach a particular kind of learning activity or content area (Chamot and O'malley, 1994). The LS most commonly taught and practiced in this phase are elaboration (students recall prior knowledge), advance organization (students focus on key vocabulary and concepts to be introduced in the lesson). To sum up the preparation phase is to develop students' awareness through a variety of activities (Reynolds, 2015).

2. **Presentation**

In the presentation phase of the lesson, new information is presented and explained explicitly to students in English that is supported by contextual clues such as demonstrations and visuals. CALLA teachers make sure that students comprehend the new presented information so that they will be able to practice it meaningfully in the next stage of the lesson (Chamot, 2009). LS expected to be taught and practiced in this phase are selective attention while reading a text or listening, self-monitoring (checking one's level of comprehension), guessing meaning from context, elaboration (relating new information to prior knowledge), and questioning for clarification (Horwitz, 2020).

3. Practice

The practice phase of the lesson is learner-centered since the students engage in activities to practice the new information they have been exposed to in the presentation phase (O'malley and Chamot, 1990). One of the important elements of this phase is that it is integrated into the regular class work so that the students can make a connection between the new strategy and authentic tasks that they need to accomplish (Chamot et al., 1999). The teacher acts as facilitator in helping students assimilate the new information and use it in different ways. The CALLA teachers need to promote higher-order thinking skills, use a variety of activities such as cooperative learning, process writing, and inquiring approaches. The students apply language and content learning strategies (Horwitz, 2020). The LS practiced in this phase of the CALLA lesson are self-monitoring (students check their language production), organizational planning (planning how to develop an oral or written report or composition), resourcing (using reference materials), grouping (classifying concepts and events), summarizing, deduction (using a rule to understand or produce language or to solve a problem), imagery (making sketches, diagrams, charts), elaboration, inferencing, cooperation (working with peers) and questioning for clarification (O'malley and Chamot, 1990).

4. Evaluation

In the evaluation phase of the lesson, students check the degree of their performance so that they can get an understanding of what they have learned and any areas they need to review. In this phase, students learn to do their own planning, monitoring, and evaluating of strategy applications (Chamot, 1998). Evaluation activities can be individual, cooperative, or teacher-directed. LS used in the evaluation phase of a CALLA lesson are self-evaluation, elaboration, questioning for clarification, cooperation, and self-talk (Chamot, 2009).

5. Expansion

In the expansion phase of the lesson, students are encouraged to apply and think about the new concept, skills and strategies they have learned, integrating them into their existing knowledge frameworks, make real world applications, and continue to develop academic language (Reynolds, 2015). This phase gives the opportunity to exercise higher-order thinking skills such as inferring new applications of a concept and evaluating the importance of a concept or new skill (Chamot and Robbins, 2005).

1.2 Creative Thinking

The term creativity is multifaceted. For many people, creativity is a gift that only specific individuals can possess, and for others it can be acquired, learned and improved. Creativity is described as thinking of a common idea in an uncommon way. It involves the ability to take a concept, idea, or product and move it in new directions. Creative thinking requires self-direction, initiative, and it is less concerned with argument and proof than with inquiry and exploration (Diyanni, 2016). Creativity in the last decades has found its way into each facet of human life and it has the main interest of a large number of researchers including educators, scientists and neuroscientists. Every discipline has tried to decode creativity in different ways (Ward, 2007). Since this study focuses on creative thinking in education, the researcher will need to present a diverse range of perceptions on creative thinking related to educational context. Torrance, who is one of the leading researchers in the field of creative thinking, when he has been asked in one of his interviews about the definition of creative thinking, he has answered that he has been struggling with this question for 40 years. Researchers still highlight the complexity of defining creative thinking (Hod-shemer, 2024). Academics have not shared a view on what creative thinking and creativity mean reflecting different points of view. Psychologists look inward and

theologians upward. At a simple level, being creative needs making something that has not been there before (Grigg and Lewis, 2019).

1.2.1 Creative Thinking Process

Some characteristics of creative thinking involve being open to new ideas, believing that alternatives exist; different judgments, generating multiple approaches to problems, trying novel ways to generate ideas. Creative thinking is associated with imagination, innovation, originality, lateral thinking, and divergent thinking (Diyanni, 2016). This is supported by Grigg and Lewis (2019) stating that creative thinking is imaginative thinking directed toward innovation and it is grounded in the consideration of alternatives, possibilities, other ways of imagining and doing things. The key to creative thinking is imagination. Its goal is to develop new insights, novel approaches and fresh perspectives (Diyanni, 2016).

One of the earliest theories puts forward to explain the process of creative thinking is based on observation and a study of famous inventors. The English psychologist Graham Wallas has presented in his book *The Art of Thought* that the process of creative thinking begins with inception or preparation that means understanding the task in hand and it includes identifying and exploring the problem from different sides and collecting background information. During this stage, the problem is put aside without much deliberate thought. The brain begins to make connections with previous experiences essential to formulate ideas. The idea emerges during the illumination stage and may follow a gut feeling. Finally, the idea is then implemented and tested (realization), first personally and then with others, which is called verification (Jones, 2012).

Rather (2004) describes four distinct stages to explain the creative process saying:

- **Preparation** is considered the period of accumulating necessary factual knowledge, skills and basic ideas. During this period the person is conscious of the problem and collects the necessary material and information.
- **Incubation** refers to the period of relaxation, turning attention away from the problem. During this period a kind of unconscious activity is going on.
- **Illumination** is connected with the sudden realization of a solution to a problem.
- **Verification** is the period during which the solution is tested. This is the period in which produced objects gets the final form after testing the validity of the concepts.

These stages of creative thinking process are supported by various researchers such as Sadeh (2011), Gladding (2016) and Runco & Sakamoto (1999).

Torrance (1988) presents a model for the process of creative thinking consisting of four logical stages that are sensing problems or difficulties, making guesses or hypotheses about the problem, evaluating the hypotheses and possibly revising them, and communicating the results. Treffinger et al., (2000) present a model for the process of creative thinking consists of six stages that are constructing opportunities, exploring the data, framing problems, generating ideas, developing solutions, and building acceptance. On the other hand Newell (2001) presents a different model for the process of creative thinking involving thirteen stages that are defining, determining, developing, gathering and searching, studying, generating, identifying conflicts, evaluating assumptions, resolving conflicts, creating common ground, constructing, producing and finally testing.

1.2.2 Creative Skills

There are various factors that go with creative performance. There are certain personal and situational attributes have been found to be more promising predictors of creative performance than others. For example, the intellectual features such as originality, redefinition, flexibility, fluency, elaboration, and evaluation have come out as valid measures of creative performance. In other words, components of memory, cognition, and convergent production, and divergent production are involved in creative work. Divergent production leads to be the most important for the production of ideas in both quantity and quality as it involves originality, flexibility, sensitivity, and ability to redefine (Rather, 2004). Among the core creative thinking skills are observing and noticing deeply, asking thoughtful questions, envisioning and visualizing, wondering and speculating about possibilities, engaging with problems patiently and persevering with them (Diyanni, 2016). According to Lynch and Harris (2001) creative thinking involves the skills of fluency and flexibility of thinking, personality, perceptiveness of problems, redefining and elaborating. Maseley et al., (2005) add that creative people are sensitive to problems, fluent in their thinking and expression, and flexible, spontaneous and adaptable in coming up with original and novel solutions.

Most researchers who are interested in creative thinking (for example, Kitto et al., 1994 and Alsoroor, 2002) highlight a set of skills which release through creative production, these skills are fluency, flexibility, originality, and elaboration. These creative thinking skills are clarified and explained as follows:

1. *Fluency:* Fluency of thinking id the ease of stored information that is used when it is needed and required (Kitto et al., 1994). It is described as the ability to generate the largest number of alternative ideas in a fast record time to be used as solutions for a problem or task (Jarwan, 2005). Thus, fluency is the ability to generate numerous ideas. Ibrahim (2006) views fluency as a prepared thinking, and it reflects the capability of recalling a large number of suitable ideas in a limited time and the ability to form many verbal thoughts to be used as solutions for problems. Saadeh (2011) sees fluency as the skill that makes students' ideas follow freely to collect plenty of ideas and solutions in the most possible time.

Various types of fluency can be identified:

- Verbal fluency: it refers to the person's ability to produce the largest possible set of words that contain certain characteristics that lead to produce specific shape reflecting the fast thinking (Al-Haweidi, 2002). It is also mentioned as the fluency of words and it represents a series of words depending on one's storage of knowledge to achieve some requirements. For example, the teacher asks the students to produce words that consist of just three letters or start with the same letter (Zaitoun, 1987).
- Intellectual fluency or fluency of meaning: it is the ability to make up a large number of ideas in a specific time as responses in a specific situation, regardless of their level or type (Al-Suleiti, 2006).
- Fluency of shapes and symbols: it refers to the ability to draw some details or add some additional examples and modifications in a specific time.
- Connective fluency: it refers to the quick production of some words or ideas that are characterized with certain relation. This skill requires recalling the largest number of things that have a kind of connective features, for example, synonyms.

- Expressive fluency: it is concerned with the ability to form graphical images or to think quickly and produce distinctive ideas in expressive situations such as writing meaningful sentences that contain some certain words (Abujado, 2004).

2. *Flexibility:* it is the ability to produce a variety of ideas. Flexibility is a major dimension of creativity and a key thinking skill. It is defined as the case with which people can switch to a different approach or consider a different perspective (Bass et al., 2013). It also refers to the ability to adapt, change, or switch between concepts, to conceive alternative pathways, and to get away from mental fixation (Wan et al., 2022). Thus, flexibility is described as the change of mental ability to be compatible with changing attitudes; a person is flexible to diversity of ideas and points of view. It varies depending on situations and circumstances (Mostafa, 2002). In real life situations, flexibility may manifest itself in the ways cope with difficulties. If the usual way to deal with a problem is not effective, a person who thinks flexibly does not continue with their original practice but instead rapidly devises new approaches. Flexibility, therefore, always involves shifts and changes of meaning or reinterpretations in the service of problem-solving (Wan et al., 2022).

Abedallah (2003) distinguishes between the meaning of fluency and flexibility stating that fluency is specified by the number of responses and the speed of their release together whereas flexibility puts emphasis on the variety of responses and that means it concerns with quality not quantity. According to Mosa (2000) two types of flexibility can be identified, spontaneous flexibility and adaptive flexibility. The first type refers to the speed of making appropriate and non-typical responses to the problems and difficult situations, it is the person's ability to express his/her own ideas freely and spontaneously without having previous instructions whereas the second type indicates the person's mental ability to adapt new adaptations such as ideas, solutions and directions to encounter challenges of different situations and circumstances.

According to Wan et al., (2022) flexibility contributes to different aspects of learning, communicating, and socializing. In particular, it allows the learner to:

- Understand an issue from different perspectives.
- Produce novel and original ideas.
- Make connections between matters that fall within different domains or categories.
- Understand other people's situations.
- Consider a variety of approaches to a problem.
- Quick adapt to novel or unfamiliar environment.
- Accommodate unexpected situations.
- Entertain different possibilities and solutions.

Consequently, strategies that teach flexibility focus on encouraging students to break free of the background constraints and make a conscious shift away from their usual thought paradigms while adopting new dimensions. For example, teachers may engage students in questions or projects that require them to think or act in ways that are different from what they are used to, to adopt an unusual point of view such as to ask students to create a painting from the viewing angle of an ant, a bee, or an eagle.

3.*Originality:* it is usually understood as something new and unique, not seen or thought of beforehand, it is often used interchangeably with novelty. To identify original ideas, they must be realistic, purposeful, appropriate, useful, feasible, or acceptable. Thus, originality is the ability

to generate new and unusual ideas or options (Wan et al., 2022). Hokanson (2018) displays twofold features of original ideas_ they should be rare or unique, or they can be strange mutation, dead ends, and utter failures. Original ideas are generated during cognitive activities such as problem-solving, novel solutions, to a problem. Jarwan (1999) highlights the skill of originality as the most related skill to the creative thinking and the essence of its meaning depends on the individual ability to produce unfamiliar and unexpected and unique ideas. Wan et al., (2022) add that the new, unusual, and original ideas often stem from an individual's experiences and knowledge through processes such as combining and synthesizing, reorganizing and redefining. Training students' cognitive skills, such as divergent and convergent thinking, is crucial for developing their creativity. Cognitive skills enable students to surf through their knowledge repertoire, make connections and associations and eventually produce something original, unique and useful. Teachers should help students build their knowledge repertoire in order to develop their students' originality.

4. *Elaboration:* elaboration as a skill of creative thinking, refers to the ability to make ideas richer, more interesting, or more complete (Treffinger et al., 2002). It is the skill of giving additional details to an idea or product for the purpose of modification and expansion the knowledge that leads to achieve it accurately (Ibrahim, 2005). It can be seen as a facility for adding a variety of details to information that has already been produced, whether it is a product, an outline for an academic essay, a painting for art class, or a poem or story, etc. Further, this facility can evaluate the impact of the addition of details such as whether the changes have made an original product more or less interesting (Hokanson, 2018). In this sense, the construct of elaboration also has a quantitative element in that it is interested in the number of details that might be added as part of the creative process (Wan et al., 2022). Another contribution of elaboration to learning is its link to the ability to work efficiently in a team environment. As elaboration of an idea involves giving substance to an idea to support its fitness for a purpose, team comprised of individuals toward an intended outcome tend to be more efficient (Reiter-Palmon et al., 2019).

These skills are used as norm-referenced subscales for measuring creative thinking. According to MacLeod (2004) creative thinking involves putting together new, different and unique ideas by employing the four cognitive and four affective behaviours as outlined below:

Cognitive behaviours

1. Fluency_ generating a large number of ideas.
2. Flexibility_ being able to change categories.
3. Originality_ being able to come up with unique ideas.
4. Elaboration_ being able to take one idea and embellish it.

Affective behaviours

1. Curiosity_ willingness to explore and question.
2. Risk taking_ courage to take a chance.
3. Complexity_ facing the challenge of building order out of chaos.
4. Imagination_ visualizing and fantasizing ideas.

2. Methodology

In order to fulfill the main goal of this study, to find out whether the preparatory school students' creative thinking taught by the Cognitive Academic Language Learning Approach (CALLA), will equal or transcend that of students' taught via the method stated in the *Teacher's Book*, A quasi-experimental control group, pretest- posttest design is employed to investigate that

point.

2.1 Population and Sample of the Study

The population of this study involves all EFL preparatory school female students of the fifth grade in Samarra city, Salahaddin Governorate, during the academic year (2023- 2024). The total number of population is (482) students. Students in the fifth preparatory grade at Amouriya Preparatory School for Girls are selected to represent the sample of the study. The total number of the sample is (60) students after excluding the repeaters in each section. Equivalence between groups is the essence of the experimental method. Without equivalence, it is impossible to unambiguously evaluate the effect of the independent variable. Therefore, the researcher is keen to establish equivalence between the two research groups (experimental and control) before starting the research experiment and starting the actual teaching. As a result, the researcher has conducted equivalence in the following variables to avoid affecting the integrity of the experiment and the accuracy of its results:

1. Chronological age calculated in months.
2. The father's academic attainment.
3. The mother's academic attainment.
4. Pre-test of language proficiency in productive skills.
5. Students' previous scores in English.

2.2 Construction of the Posttest

All the items of the creative thinking test have been constructed by the researcher based on Torrance Test of Creative Test (TTCT) to find out the effect of CALLA on EFL preparatory school students' creative thinking. According to Kim (2006) TTCT is the most widely used creative thinking test in measuring creativity in education in the world. TTCT has been developed by Dr. E. Paul Torrance in 1966 as a creativity test tool that can be used in classroom learning activities, assessment of learning outcomes, measuring students' creativity. The creative thinking test consists of verbal and figural forms. Verbal form consists of seven sub-tests: (1) asking unusual, (2) guessing causes, (3) guessing consequences, (4) product improvement, (5) unusual uses, (6) unusual questions, (7) just suppose. The figural form has three sub-tests: (1) picture construction, (2) picture completion, and (3) paralel lines.

Creative thinking test consists of ten subtests and students should answer on an asnwer sheet. The verbal form consists of seven sub-tests. Test 1, which is 'asking unusual', reveals the students' ability to sense what the student is unable to discern by looking at a picture and to ask questions to fill in gaps in knowledge. The students are asked to look at a given picture and ask as many questions as possible about what is happening. Test 2, which is 'gussing causes', promotes the ability to generate multiple solutions and responses. It has two branches, branch (a) asks the students to give causes of a given problem while branch (b) asks the students to give causes that lead to the action in a given picture.

The third sub-test is about 'guessing consequences'. It has two branches (a) and (b), in both branches students are asked to list possible results for two given situations. The fourth sub-test is called 'product improvement'. It has two branches (a) and (b). The students are required to find ideas and ways to improve a given product to make it more fun or to create a new product and giving it a suitable name. 'Unusual uses' is the fifth sub-test. It consists of two branches (a) and (b), the students are asked to devise as many uses as possible for a given object or word letters. The sixth sub-test is 'unusual questions' which consists of branch (a) and (b). The students are

asked to create as many unusual questions as possible about a given scenario. The last sub-test of the verbal form is 'just suppose'. It has two branches that ask the students to imagine a hypothetical situation and speculate what would happen in such a scenario.

The figural form consists of three subtests. Test 1 is 'picture construction'. In this test, the students are provided with a circle and are asked to incorporate this cue into a larger, more complex picture. The second sub-test is 'picture completion'. The students are given an incomplete picture, and they are asked to complete the picture in the most imaginative way. In test 3, the students are given several parallel lines and shapes and are asked to create unique images and pictures using the given lines as the starting point. Table (3-14) shows the specification of contents and behavioural objectives of creative thinking test.

2.3 Test Validity

Validity is considered the most important psychometric characteristic as it is an indicator of the ability of the measures to measure what it is prepared to measure (Harrison, 1983). It is the degree to which a test measures the purpose for which it is intended to measure and how can be applied successfully (Richards and Schmidt, 2013). The validity of the creative thinking test is achieved by content validity, face validity and construct validity.

2.4 Test Reliability

Reliability is the consistency of results of a test, it is concerned with the precision of test scores (Douglas, 2010). The researcher has obtained the reliability of the test by adopting inter-rater reliability, which is the reliability of the scoring, as the estimate or correction is a source of errors affecting the accuracy of the measurement.

2.5 Administration of the Test

At the end of the experiment, the control and experimental groups are subjected to the same refined version of the test as a posttest . The test has been administered on the 22nd of April, 2024. The researcher has distributed the test papers to the examinees and asked them to read the instructions of questions and state their responses with the limited time. At the end of the test, the researcher has collected the examinees' papers in order to be scored later.

3. Analysis of the Results

To verify the first null hypothesis, which states " There are no statistically significant differences at the level of significance (0.05) in the mean creative thinking among the mean scores of the experimental group which is taught by CALLA and the control group, which is taught according to the method stated in the *Teacher's Book*, in creative thinking posttest ", the researcher has compared the mean scores of the two research groups. The statistical results show that the mean scores of the experimental group is (70.133) with a standard deviation (12. 224), whereas the mean scores of the control group is (45. 233) with a standard deviation (13.653).

The t-test formula for two independent samples has been used in order to find out whether there is a significant difference between the mean scores of both research groups or not. The computed ' t ' value, which is (8. 383), has been compared with the tabulated ' t ' value, which is (2.000) at a significance level of (0.05) and a degree of freedom (58). This comparison indicates that since the computed ' t ' value is higher than the tabulated ' t ' value, there are statistically significant differences between the experimental group which is taught by CALLA and the control group which is taught according to the method stated in the Teacher's Book, as

shown in Table (2). Thus, the hypothesis which states " There are no statistically significant differences at the level of significance (0.05) in the mean creative thinking among the mean scores of the experimental group which is taught by CALLA and the control group which is taught according to the method stated in the *Teacher's Book* in creative thinking posttest " has been rejected.

Table (2)

The Mean, Standard Deviation, and ' t ' Value of the Creative Thinking Posttest For Two Research Groups

Group	No.	Mean	Standard Deviation	Variance	t- test		Degree of Freedom	Level of Significance
					Computed	Tabulated		
Experimental	30	70.133	12.224	149.421	8.383	2.000	58	0.05
Control	30	45.237	10.734	115.219				

5. Conclusion

In the light of the obtained results, the following conclusions have been drawn:

1- CALLA has positive effect on EFL Iraqi students' creative thinking.
2- The integration of cognitive strategies fosters the students' innovative thinking.
3- The implementation of CALLA has facilitated more effective communication and expression of ideas, resulting in improvement in students' ability to think creatively .
4- Employing cognitive and metacognitive strategies for learning has helped the students to increase their language acquisition and has improved their abilities to plan and execute academic tasks effectively.
5- The relevance of language skills to academic success encourages students to participate actively and take ownership of their learning process. This has positively influenced the students' motivation and engagement in learning.
6- The results underscore the adaptability of CALLA to the Iraqi educational context. Its focus on academic language and cognitive skills makes it particularly relevant for students facing academic challenges in learning a foreign language.
7- The findings suggest that incorporating CALLA into English language curricula can lead to more effective language instruction.

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Appendix

Creative Thinking posttest

The researcher has constructed the test based on Torrance Test of Creative Thinking (TTCT) to measure EFL students' creative thinking, but the test is modified by the researcher and all the test items are formed by the researcher herself. The test consists of verbal and figural forms, both of which relate to the creative process and include different types of thinking.

Verbal Form

- All the questions are assessed.
- Duration: 45 minutes.
- Total: 100 marks.

Test 1: Asking Unusual (10 marks)

This test reveals the student's ability to sense what the student is unable to discern by looking at a picture and to ask questions to fill in gaps in knowledge. Curiosity is the indispensable element of inquiry and creativity.

Look at the picture and ask as many questions as possible about what is happening.

Test 2: Guessing Causes (10 marks. 5 marks for each branch)

In this test, the student is presented with a picture or scenario and asked to guess the possible causes of the situation. This tests the students' ability to hypothesize and think analytically, a crucial aspect of problem-solving and innovative thinking. This test also promotes divergent thinking that is the ability to generate multiple solutions and responses.

a) Think of causes of world hunger.

b) Give causes that lead to the action shown in the drawing:

Test 3: Guessing Consequences (10 marks. 5 marks for each branch)

This test is similar to the guessing causes subtest, but in this case, the student is asked to imagine potential outcomes of a specific situation or event. This challenges the students' ability to anticipate, imagine, and think ahead, key elements of creativity and strategic planning.

a) **List possible consequences resulting from eating a lot of sugar.**
b) **Think of many results of living in a world where humans can fly like birds.**

Test 4: Product Improvement (10 marks. 5 marks for each branch)

In this test, the student is required to find ideas and ways to improve a given product to make it more fun or to create a new product and giving it a suitable name. This test taps the student's ability to develop and play with ideas. It also assesses creative problem-solving skills, critical thinking, and the ability to innovate and add value.

a) **List the cleverest and most interesting ways of changing a toy animal to make it more fun to play with.**
b) **Create a new product and describe its benefits and then give it a suitable name.**

Test 5: Unusual Uses (10 marks. 5 marks for each branch)

In this test, the student is asked to devise as many uses as possible for a given object or word. This activity tests the student's ability to think originally. this test measures the students' flexibility of thought, their ability to think divergently, and to see beyond traditional uses or constraints.

a) **Think about other uses for cardboard boxes.**

b) Form new words from the letters of the word " night ".

Test 6: Unusual Questions (10 marks. 5 marks for each branch)

The student is asked to create as many unusual questions as possible about a given scenario. This subtest encourages curiosity, and the ability to think outside the box. It reflects the students' ability to look at situations from unique and varied perspectives.

a) Ask questions about a house made up of ice.
b) Imagine you interview a character from a novel or a film, what would you ask him?

Test 7: Just Suppose (10 marks. 5 marks for each branch)

This test requires the student to imagine a hypothetical, usually fantastical, situation and speculate what would happen in such a scenario. This test assesses the students' ability to think abstractly, to stretch their imagination, and to conceive of realities outside their direct experience.

a) Suppose you are a millionaire, what would you do?
b) What would you do if a man with a gun asked for your money?

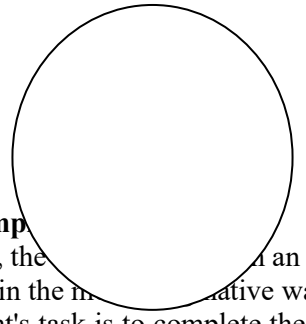
Figural Form

The figural test consists of three subtests. The figural test evaluates non-verbal graphic creativity.

Test 1: Picture Construction (10 marks)

In this test, the student is provided with a small shape or cue, for example a circle, and is asked to incorporate this cue into a larger, more complex picture. This subtest measures the how a participant can build upon a simple visual stimulus and transform it into something more creative. The student's creativity is assessed based on the originality, complexity, and the narrative quality of the constructed picture. It is designed to tap into a student's divergent thinking, imaginative storytelling, and visual creativity.

Use the following shape to construct a picture and give it a name.



Test 2: Picture Comp

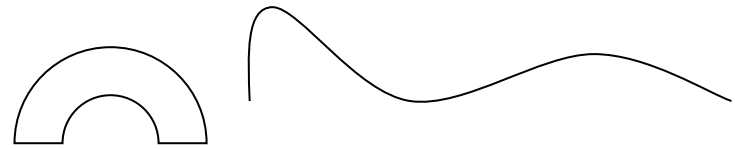
For this subtest, the [illegible] an incomplete picture or cues, and they are asked to complete the picture in the [illegible]ative way possible. The cues might be abstract lines or a shape, and the student's task is to complete the picture in a way that adds meaning, innovation, and creativity. This subtest measures the students' ability to think divergently, their personality for elaboration, and their fluency in generating creative solutions.

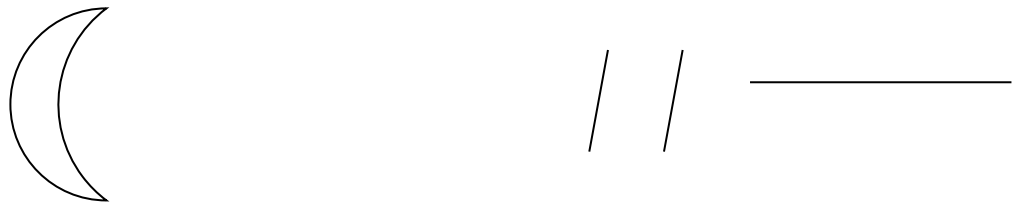
Complete the following picture:

Test 3: Lines and Circles (10 marks)

In this subtest, the student is given several parallel lines and shapes and is asked to create unique images or pictures using the given lines as the staring point. This subtest is designed to assess the examinee's ability to look at a familiar shape (parallel lines) in novel ways, encouraging innovative, divergent thinking. It measures the student's ability to generate original, unique, and elaborate concepts from simple visual cues.

Use the following lines and shapes to make objects. Add titles or names for each picture.





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