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The Role of Cognitive Code Method on EFL Iraqi Students Reading and Listening Skills

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Abstract

The objective of this quantitative experiental study is to investigate the impact of the Cognitive-Code Method on the reading and listening comprehension levels of Iraqi EFL students using the Cognitive-Code Method. To achieve the study objective the following hypotheses have been set: First, there is statistically significant higher reading comprehension scores among experimental group who are taught by using the Cognitive-Code Method compared to control group who are taught by using traditional methods. Second, there is statistically significant improvement in listening comprehension skills for experiment group who are taught by using the Cognitive-Code Method compared to those in a control group. A sample of fifty EFL students from Al-Hittin

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Secondary School for Girls in Kirkuk City participated in an experimental study designed to investigate the effectiveness of instructional methods. The experimental group received instruction using the Cognitive-Code Method, while the control group was taught through prescribed method . Data collection instruments included a post-reading and listening test. All research instruments were reviewed by experts to ensure both face and content validity. Statistical analyses involved Multivariate Analysis of Variance (MANOVA) to assess differences in comprehension outcomes between groups. Based on the findings and conclusions of this study, appropriate recommendations and suggestions for future studies are put forward.

Keywords: Cognitive-Code Method; EFL students; listening comprehension; MANOVA; reading comprehension

أثر طريقة الرمز المعرفي في تحسين مهارات الفهم القرائي والسمعي لدى الطالبات العراقيات في تعلم اللغة الإنجليزية كلغة أجنبية

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الملخص

هدف الدراسة هو التحقق في تأثير طريقة الرمز المعرفي على مستويات الفهم القرائي والاستماعي لطلاب اللغة الإنجليزية كلغة أجنبية في العراق باستخدام طريقة الرمز المعرفي. لتحقيق هدف الدراسة، تم وضع الفرضيات التالية: أولاً، هناك فرق ذو دلالة إحصائية في درجات فهم القراءة بين المجموعة التجريبية التي تُدرس باستخدام طريقة الكود المعرفي مقارنة بالمجموعة الضابطة التي تُدرس باستخدام الطرق التقليدية. ثانيًا، هناك تحسن ذو دلالة إحصائية في مهارات الفهم السمعي لمجموعة التجربة التي تم تعليمها باستخدام طريقة الكود المعرفي مقارنةً بتلك الموجودة في مجموعة التحكم. شارك عينة من خمسين طالبة في مدرسة الحطين الثانوية للبنات في مدينة كركوك في دراسة تجريبية مصممة للتحقق في فعالية طريقة التدريس. تلقى المجموعة التجريبية التعليم باستخدام طريقة الرمز المعرفي، بينما تم تعليم المجموعة الضابطة باستخدام الطريقة المقررة. شملت أدوات جمع البيانات اختبارًا بعد القراءة والاستماع. تمت مراجعة جميع أدوات البحث من قبل خبراء لضمان كل من الصلاحية الظاهرة والمحتوى. شملت التحليلات الإحصائية تحليل التباين المتعدد المتغيرات التي هي مقياس لتقييم الفروق في نتائج الفهم بين المجموعات. استنادًا إلى النتائج والاستنتاجات التي توصلت إليها هذه الدراسة، تم تقديم توصيات واقتراحات مناسبة للدراسات المستقبلية.

الكلمات المفتاحية: طريقة الترميز المعرفي؛ طلاب اللغة الإنجليزية كلغة أجنبية؛ فهم الاستماع؛ تحليل التباين متعدد المتغيرات؛ فهم القراءة

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1. Introduction

1.1 Statement of Problem

Iraqi students face significant challenges in learning English due to multiple interrelated factors, including inadequacies in teaching methods, curriculum design, classroom environments, and learner-related issues. While various learning strategies can aid English language acquisition, the Iraq Opportunities teachers' guide suggests these are often taught implicitly. Implicit learning is defined as "acquiring knowledge about the underlying structure of a complex stimulus environment by a process which takes place naturally, simply, and without conscious operation" (Ellis, 1994:1).

Language learning strategies (LSs) are actions learners take to improve their own learning outcomes. Oxford (1990:8; 1994:1) defines LSs as "specific actions, behaviors, steps, or techniques students use to improve their progress in understanding, internalizing, and using the L2/FL." These strategies support cognitive processes such as memorization and comprehension and are often conscious and controllable (Pressley et al., 1985:4). LSs go beyond natural task completion, involving cognitive operations that can occur as isolated actions or as a sequence of interdependent steps.

Cohen (2000:15) argues that many students require explicit training to become more proficient in using a wide array of learning strategies. This view is supported by Chamot and O'Malley (1994:11), who advocate for explicit strategy instruction, which involves equipping learners with a toolkit of strategies adaptable to different learning contexts.

To validate these theoretical perspectives, empirical data is essential. Analyzing students' performance helps identify ineffective cognitive strategies and understand how specific techniques enhance language acquisition. This gap in research, especially regarding secondary school preparatory students in Kirkuk, has motivated the current study to explore the role of cognition in second language acquisition using this specific population.

1.2 Aims of the Study

The aim of the study is to Examine how the Cognitive-Code Method affects Iraqi EFL students' reading and listening comprehension skills.

1.3 Hypothesis of the Study

By confirming these theories, the study's goal should be accomplished:

1. The experimental group, which is taught using the Cognitive-Code Method, has statistically significant higher reading comprehension scores than the control group, which is taught using conventional methods.

2. The experiment group that receives instruction utilizing the Cognitive-Code Method shows a statistically significant improvement in their listening comprehension abilities when compared to the control group.

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1.4 Research Questions

1-What is the effect of the Cognitive-Code Method on Iraqi EFL preparatory students' ability to comprehend English input?

2-How does the Cognitive-Code Method influence students' grammatical awareness and comprehension skills in English?

3-What are the differences in comprehensible input outcomes between students taught using the Cognitive-Code Method and those taught using traditional methods?

4-To what extent does the Cognitive-Code Method engage students in cognitive processing of English input compared to other instructional methods?

1.5 Limits of the study

This study is limited to the 5th class preparatory students of Hittin highschool for girls who are studying English for Iraq textbook, teaching them unit two and three according to cognitive-code method during the academic year 2024-2025.

1.6 Definitions of basic terms

Effect

The operational definition:

Effect means the influence of scripting strategy on EFL pupils achievement

'. Also, Effect means something produced on action or cause which produced usually more or less immediately (Partic, 1971;46)

It means change that is caused in a person or thing by another person or thing. (Collins,1987;451).

Effect is defined as a result of something or the ability to bring about a result.

Cognitive-Code

Cognitive-code learning refers to a method of second language teaching and learning rooted in cognitivist psychology and structural applied linguistics. The theory emphasizes the central role of cognition in the conscious and explicit learning of the rules of a language as a code.

EFL

It means English as a foreign language is learning English in a non- English-speaking country for example, students' in Iraq who are learning English are considered EFL student' because English is not the official language of the country. But if those same students were in U.S learning English they would be considered ESL students.

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Input

is a key concept in language acquisition, especially when it comes to teaching and learning languages. Linguist Stephen Krashen popularized the word in the 1980s. It describes linguistic input that students can comprehend even if they are not familiar with all of the vocabulary and grammatical constructions. According to this theory, language acquisition is most successful when learners are exposed to language that is only marginally more advanced than their existing skill level; this is sometimes referred to as "i+1," where "i" stands for the learner's current level of comprehension.

1. Theoretical Background

2.1 Cognitive-code Learning Theory

The **Cognitive Code Method**, developed by Robert Lado, operationalizes early ideas in cognitive-based language instruction by integrating cognitive psychology with language learning. Introduced in the early 1960s, it marked a shift from mechanical repetition to an emphasis on understanding grammar and vocabulary in meaningful contexts (Lado, 1964). This approach set the stage for deeper comprehension and better retention, as later supported by research (Brown, 2007; Ellis, 2008).

Cognitive-Code Learning Theory (henceforth, CCLT), a specialized branch of the broader Cognitive-Code Approach, was developed during the same period by scholars like J. B. Carroll and K. Chastain. They introduced CCLT in response to the dominance of the Audio-Lingual Method, promoting instead an analytical and conscious understanding of language rules. Rooted in **Gestalt psychology**, this theory emphasizes holistic learning, encouraging learners to engage mentally with linguistic structures (Carroll, 1965; Chastain, 1969).

According to **Carroll (1966),** learning a second language requires acquiring intentional control over its phonological, grammatical, and lexical features. This is primarily achieved through analysis and study rather than mere exposure. In CCLT, **rule deduction**—the ability to infer and apply rules independently—develops naturally through meaningful language use in purposeful contexts.

Cognitive Code Theory, more broadly, emerged in the 1960s as a response to limitations in traditional behaviorist teaching methods. Drawing from **Chomsky's Transformational Grammar** and **Carroll's cognitive psychology**, it emphasizes mental engagement and internalization of linguistic rules, in contrast to passive habit formation promoted by behaviorism (Wiącek, 2024).

2.1.11 Reading Comprehension

Why is it important to read and understand a text? The ability to mentally represent the information in a book is fundamental to reading comprehension (Kintsch, 1988). "The process of

simultaneously extracting and constructing meaning through interaction and involvement with written language" is the technical definition of reading comprehension (Snow, 2002).

The reader, the text, and the reading task are the three interrelated parts of reading, and they are all situated within a larger sociocultural framework. The specific texts used and the activity the reader is engaged in influence the skills (e.g., attention, memory, inferencing), knowledge (e.g., domain expertise, linguistic proficiency), and motivation (e.g., reading objectives, interest) that a reader needs to comprehend a text (Snow, 2002). While each of these factors is essential for reading comprehension, this article focuses on reading processes, components, and individual differences.

One of the most complex tasks that people may perform is reading comprehension (Kendeou, McMaster, & Christ, 2016). The development of a comprehensive theory that can accurately forecast readers, texts, and discourse contexts is hampered by its complexity (Kendeou & O'Brien, 2014; Perfetti & Stafura, 2014). Consequently, scholars have put forth models that focus on a limited number of components and procedures related to reading comprehension.

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2.1.12 The Listening Process

When analyzing the listening process, it is critical to understand that voice cues require immediate attention. According to Floyed (1985), listening is a technique that aids comprehension and leaves an impression in the learner's memory (Vandergrift, 2004). In contrast to reading, listening requires fast processing, with little opportunity to reread the verbal material, making it more difficult than reading. Typically, language learners must comprehend verbal messages at the rate dictated by native speakers, which is sometimes quite fast (Osada, 2004).The fundamental differences between first and second language receiving may emerge when native listeners face difficulties owing to interruptions, a lack of focus, or when they engage with the verbal material while thinking about unrelated topics. The difficulties faced by second or foreign language listeners originate from limited linguistic knowledge, poor awareness of the socio-cultural contexts of the second language, or a lack of pragmatic schemata that aid in drawing meaning from spoken communications.

The demand on second language learners to manage structural and grammatical obstacles while processing verbal messages, combined with the need to do so in real time, makes listening comprehension complicated, dynamic, and harmful (walker, 2014).

2.1.13 Listening Skill and Second Language Proficiency

The four fundamental and connected language skills of speaking, writing, listening, and reading are all included in second language learning. Through aural exposure to others, language learners with excellent listening skills can develop speaking, reading, and writing skills as well as participate in communicative relationships with ease (Brown, 2008; Lin, 2001). Fluency in

second or foreign languages was prevalent in the 1970s. A number of prominent academics are highlighting the significant impact that listening pedagogy has in ESL/EFL classrooms. According to Krashen (1992), understanding incoming messages through a bottom-up decoding process is essential to learning a second or foreign language. Exposure to comprehensible language is essential for second language acquisition (Rost, 1994). Hunsaker (1990) came to the conclusion that aural perception accounts for around 80% of human learning.

As a result, this study's Communicative Language Teaching approach was developed to help students better understand how listening skills have a significant impact on their second or foreign language competency. However, the effect of listening skills on second or foreign language proficiency has not received much attention in study. Merbaum (1998) uses listening skills to predict how first and second language learners will develop their reading skills. However, child learners of a second language usually fall behind in terms of vocabulary and prosody as they go. In elementary-level kids, McCaulley (1992) shows that listening skills have a substantial link with reading comprehension but a modest correlation with listening comprehension.

According to Park (2006), ESL university students' overall English language ability was positively correlated with their listening and reading skills. When Bozorgian (2012a, 2012b) examined the relationship between writing, reading, and hearing skills, he found that listening and reading skills were significantly correlated. As a result, previous study indicates that there is a dearth of literature, especially in first language studies and second/foreign language research, about the influence of listening competence on the abilities of three other language skills as well as overall language proficiency.

2.2 Previous Related Studies

2.2.1 Abdul-Sahib's 2014

The study examines the impact of the Cognitive Academic Language Learning Approach (CALLA) on the achievement scores of intermediate EFL students in Baghdad, Iraq. The study involved 50 2nd Intermediate EFL Iraqi female pupils and used post-test, Chi-square, Mann-Whitney, and Alpha Cronbach formula statistical methods. Results showed that students who received the Teaching CALLA Model showed better achievement compared to those without Strategies-Based Instruction. The study suggests that explicit strategy instruction and teacher training can enhance English language learning.

2.2.2 Oyekanmi's (2020)

The study titled "Effect of Cognitive-Code Learning Method on Public Senior School Students' Achievement in English Primary and Modal Auxiliary Verb Usages in Owerri, Imo State, Nigeria" examined the impact of cognitive-code learning on English language primary and modal auxiliary verb usage in two Nigerian secondary schools. Results showed significant improvement in students' performance, with female students performing better than males. The

study recommends cognitive-code learning for teaching English language primary and modal auxiliary verbs.

3.Methodology

3.1 Experimental design

Experimental design is the process of carrying out research in an objective and controlled fashion so that precision is maximized and specific conclusions can be drawn regarding a hypothesis statement. (Bell, 2009)

The structure of a study and the procedures used to conduct it make up the research design (Kerlinger, 1973). At the very least, this strategy describes the variables to be examined, the methodology to be used, and the anticipated correlation between them (Spector, 1981). To reduce biases of all types, experimental designs have been created.
The primary causes of bias will be reviewed in the section on risks to internal and external validity.Before beginning a study, researchers need to select an experimental design that is suitable for evaluating the implications of their hypotheses (Van Dalen, 1962). A proper design must be selected in order to determine whether the results that will be gathered are valid, impartial, and accurate. The nonrandomized Control-group Pretest-Post test design was chosen in order to achieve the objective of the current investigation. (Lewin ,1979)
In order to accomplish the goal of the current study, two groups of female students in the fifth preparatory class are selected from AL-Hittin School in Kirkuk City/Sahat Al-Tayaran.

Table 3-1
The Experimental Design

Groups	Pretest	Independent Variable	Dependent Variable	Posttest
Experimental	Students' Comprehensible Input	Cognitive-Code Method	Comprehensible Input	Post 1,2 comprehensible Input
Control	Students' Comprehensible Input	Prescribed Teaching Method	Comprehensible Input	Post 1,2 comprehensible Input

3.2 Test Construction

3.2.1 Oral Posttests

The following are the behavioral objectives for the oral post-test aligned with each test section:

1. Students will share their thoughts and feelings in response to a simple conversational question. Additionally, they will demonstrate their capacity to use appropriate vocabulary and sentence structure in a coherent, natural discussion.
2. The students will retell the prescribed story in their own words, maintaining logical order and consistency. • Students will use appropriate sentence structure and vocabulary when narrating; they will also incorporate relevant facts and concepts to demonstrate their understanding.
3. By identifying key facts and primary ideas, students will exhibit listening comprehension. They will also give a brief synopsis of the story that highlights the most relevant details.
4. Students will compose past perfect tense sentences that are grammatically correct. • Pupils correctly translate statements into inquiries. • Recognize and employ the proper prepositions in sentences. • Students will correct any grammar errors in the sentences that are provided. • Students will appropriately and logically finish phrases.
5. By identifying phrases that have opposite or similar meanings, students will show that they comprehend synonyms and antonyms. • Students will define a word and describe its significance. • By selecting an appropriate word to complete a statement, students will apply their vocabulary knowledge.

3.2.2 Written posttest and Cognitive-Code Integration

Question 1: Encourages analytical thinking by requiring students to identify key details and reconstruct text meaning**.**
Question 2: Promote active recall by testing students' ability to extract information from prior lessons.
Question 3: Applies rule-governed learning from the cognitive-code method by requiring students to analyze and apply grammar structures.
Question 4 /A : Reinforces pattern recognition and word formation skills using explicit grammatical rules.
Question 4 /B : Encourages context-based vocabulary learning , helping students internalize word meaning.
Question 5 : Active listening and cognitive processing by reqiring students to interpret spoken language.

3.3 Validity

The validity of a test is the extent to which it measures what it is intended to measure. It guarantees that test results are accepted, reliable, and pertinent when making judgments about education. According to (Messick, 1989), validity is an integrated assessment of how well theoretical justifications and empirical data support the suitability and sufficiency of conclusions and actions drawn from test results.

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3.3.1 Face Validity

Based on subjective assessment rather than statistical analysis, face validity is the degree to which a test appears to measure what it is intended to measure. It is focused on whether test

takers, educators, and other stakeholders believe the test to be valid.

According to (Holden, 2010), face validity is the extent to which a test seems to measure the concept it is meant to evaluate, as perceived by non-experts. Face validity is important because an irrelevant test may affect test-taker motivation and performance, even though it is not a very strong type of validity.

3.3.2 Content Validity

Content validity refers to how well a test represents the whole domain of the skill or knowledge area it is intended to measure. It ensures that all important components of the construct are addressed and evaluated equitably.

(Haynes,et al., 1995) define content validity as the extent to which elements of an assessment instrument are relevant and representative of the targeted construct for a particular assessment purpose. This form of validity is frequently examined through expert review, in which experts in the subject examine whether the test is consistent with learning objectives. This study establishes content validity by developing test items that thoroughly evaluate reading and listening comprehension, grammatical knowledge, and vocabulary retention—all critical components of language acquisition under the Cognitive-Code Method.

The content analysis of test items follows Bloom's Taxonomy of Behavioral Objectives, starting with "remembering" and progressing to "creating." As shown in table below (3-11)

3-11
Bloom's Taxonomy of Behavioral Objectives

Test items	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
1	/	7	/	8	/	/	15
2	2	3	/	/	/	/	5
3	/	/	5	5	/	/	10
4	10	5	5	/	/	/	20

5	/	5	/	5	/	/	10
Total	12	20	10	18	/	/	60

3.4 Reliability

Reliability is the ability of a test to measure what it is supposed to assess consistency and steadily. A dependable test ensures that the measurement is unaffected by chance mistakes or outside influences by yielding consistent results under various situations, raters, and administrations (Bechman, 1990; Brown, 2005). (Crocker and Algina, 2008) state that Reliability refers to the degree to which test scores are free from errors of measurement and thus yield consistent results under similar conditions**.**

Reliability is similarly described by (Mujis, 2011) as a test that produces the same results when administered on different occasions, under the same conditions , and with the same subjects.

4.1 Data Analysis and Results

With reference to the first aim which is:To investigate the impact of the Cognitive-Code Method on the reading and listening comprehension levels of Iraqi EFL students post[1] and post [2] tests for exp.and cont. groups , results of MANOVA test , are shown in table 1-4

Results are found out with respect to:

The macro calculated tests of multivariate listening post1,post2 tests and reading post 1,post2 tests for exp. group and listening post1,post2 tests and reading post1,post2 tests for cont.group.

Table 4-1 Between-Subjects Factors

		Value Label	N
exp, cont	1	Listening post[1] & post[2]	25
	2	Reading post[1] & post[2]	25

It is clear from Table **(4-1)** that the listening post test[2] has

obtained the highest averages (M = 13.84; Std.D= 1.405) in favour of experiment group, and the Listening post test1 has achieved the lowest averages (M =7.88; Std.D =2.147) in favour of control group.The calculated data indicate initially that the Cognitive-Code Method affects the Iraqi EFL students reading and listening comprehension levels

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Table 4-2 Descriptive Statistics

Dependent Variables	exp, cont	Mean	Std. Deviation	N
listen post1	exp	12.52	2.143	25
	cont	7.88	2.147	25
	Total	10.20	3.162	50
listen post2	exp	13.84	1.405	25
	cont	8.68	2.410	25
	Total	11.26	3.256	50
reading post1	exp	12.72	1.838	25
	cont	8.16	2.115	25
	Total	10.44	3.025	50
reading post2	exp	13.44	1.446	25
	cont	9.48	2.859	25
	Total	11.46	3.005	50

Box's M Test is used to know the equality of covariance between the groups in listening pos[1],post[2] and reading post[1]and post[2] tests. Significance for this test is determined at $\alpha = .001$ because this test is considered highly sensitive and the equivalent of a multivariate homogeneity of variance is achieved.

Table 4-3 Box's Test of Equality of Covariance Matrices[a]

Box's M	33.812
F	3.075
df1	10
df2	10
Sig.	.001

Wilks' Lambda and p-values: A significantly low Wilks' lambda (often accompanied by a p-value below the chosen significance level 0.05) indicates that the group means differ on a combination of the dependent variables. However, it is important to understand that a significant result indicates that differences exist .

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In light of the nature of this data,the multiple variance analysis method is used.

MANOVA Which is used to know the effect of an independent variable

with multiple levels on more than one dependent variable. Table **4-4**

summarizes the result of this treatment. The results of the simple multiple

analysis of variance indicate that analysis of variance MANOVA Which is used to

measure the effect of the post[1] and post [2] test on students' reading and listening comprehension input.

There is a statistically significant effect.461.620 = Lampda and level of

Significance is lower than 0.05. By continuing the analysis, the results of the

analysis of variance indicate that EFL students listening post2 test is

affected by the cognitive code method than the other traditional method

Table 4-4 Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.976	461.620[b]	4.000	45.000	.000	.976
	Wilks' Lambda	.024	461.620[b]	4.000	45.000	.000	.976
	Hotelling's Trace	41.033	461.620[b]	4.000	45.000	.000	.976
	Roy's Largest Root	41.033	461.620[b]	4.000	45.000	.000	.976
Groups	Pillai's Trace	.679	23.797[b]	4.000	45.000	.000	.679
	Wilks' Lambda	.321	23.797[b]	4.000	45.000	.000	.679
	Hotelling's Trace	2.115	23.797[b]	4.000	45.000	.000	.679
	Roy's Largest Root	2.115	23.797[b]	4.000	45.000	.000	.679

a. Design: Intercept + groups
b. Exact statistic

4.2 Discussion of the Aim

The first objective of this study was to examine whether the Cognitive-Code Method (CCM) significantly enhances the reading and listening comprehension skills of Iraqi EFL students

compared to traditional teaching methods. To evaluate this, a Multivariate Analysis of Variance (MANOVA) was conducted on post-test scores from both experimental and control groups.
The results of the MANOVA indicated a statistically significant difference in reading comprehension scores between the two groups, favoring the experimental group taught using the Cognitive-Code Method. This supports the first hypothesis that students exposed to CCM achieved higher reading comprehension performance than their counterparts in the control group.

Similarly, the analysis showed a significant improvement in listening comprehension among students in the experimental group. The second hypothesis that the Cognitive-Code Method would result in greater listening comprehension gains was also confirmed by the data.

The improvement can be attributed to the CCM's emphasis on understanding linguistic forms and meanings before actual use. This method helps learners decode spoken language more effectively by recognizing patterns and structures. According to Ellis (2003), such attention to form contributes to enhanced listening accuracy and comprehension, especially in EFL contexts where exposure to natural language input is limited.

5. **Conclusions**

The present study investigated the effect of the Cognitive-Code Method (CCM) on the reading and listening comprehension levels. The findings reveal that students taught using the CCM demonstrated significantly higher performance in both listening and reading post-tests compared to those in the control group, confirming the method's positive impact on comprehensible input acquisition. This result aligns with Anderson's (1983) cognitive learning framework, which emphasizes the role of conscious rule formation and structured input in skill development.

Overall, these results demonstrate that the Cognitive-Code Method fosters a deeper level of cognitive engagement with language input, leading to enhanced comprehension. It is recommended that EFL curricula integrate CCM-based strategies to improve student outcomes, particularly in contexts where learners benefit from explicit instruction to overcome input limitations.

References

Anderson, J. R. (1983). The architecture of cognition. Harvard University Press.

.Bechman, G. (1990). Assessment in the language classroom. Cambridge University Press.

.Bell, J. (2009). Doing your research project: A guide for first-time researchers in education, health and social science (4th ed.). McGraw-Hill Education.

.Bozorgian, H. (2012a). The relationship between listening and other language skills in international English language testing system. Theory and Practice in Language Studies, 2(4), 657–663. https://doi.org/10.4304/tpls.2.4.657-663

.Bozorgian, H. (2012b). Metacognitive instruction does improve listening comprehension. International Scholarly Research Network Education, 2012, 1–6. https://doi.org/10.5402/2012/734085

.Brown, H. D. (2005). Language assessment: Principles and classroom practices. Pearson Education.

.Brown, H. D. (2007). Principles of language learning and teaching (5th ed.). Pearson Education.

.Brown, H. D. (2008). Teaching by principles: An interactive approach to language pedagogy (3rd ed.). Pearson Longman.

.Carroll, J. B. (1966). The contributions of psychological theory and educational research to the teaching of foreign languages. Modern Language Journal, 50(1), 3–10. https://doi.org/10.2307/321406

.Carroll, J. B. (1965). The Contributions of Psychological Theory and Educational Research to the Teaching of Foreign Languages. Modern Language Journal, 49 (5).

.Chastain, K. (1969). The audio-lingual habit theory versus the cognitive code-learning theory. The Modern Language Journal, 53(8), 395-403. https://doi.org/10.1111/j.1540-4781.1969.tb04677.x

.Chamot, A. U., & O'Malley, J. M. (1994). The CALLA handbook: Implementing the cognitive academic language learning approach. Addison-Wesley Publishing.

.Cohen, A. D. (2000). Strategies in learning and using a second language. Longman.

.Collins English Dictionary. (1987). Collins COBUILD English language dictionary. HarperCollins.

.Crocker, L., & Algina, J. (2008). Introduction to classical and modern test theory (2nd ed.). Cengage Learning.

DeKeyser, R. M. (1995). Learning second language grammar rules: An experiment with a miniature linguistic system. Studies in Second Language Acquisition, 17(3), 379–410. https://doi.org/10.1017/S027226310001425X

.Ellis, R. (1994). The study of second language acquisition. Oxford University Press.

.Ellis, R. (2003). Task-based language learning and teaching. Oxford University Press.

.Ellis, R. (2008). *The Study of Second Language Acquisition*. Oxford University Press.

.Floyed, J. (1985). Listening: A practical approach. Scott Foresman.

.Haynes, S. N., Richard, D. C. S., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. Psychological Assessment, 7(3), 238–247. https://doi.org/10.1037/1040-3590.7.3.238

.Holden, R. R. (2010). Face validity. In I. B. Weiner & W. E. Craighead (Eds.), The Corsini encyclopedia of psychology (4th ed., Vol. 2, pp. 637–638). John Wiley & Sons.

.Hunsaker, D. (1990). Understanding language learning: The teacher's guide to successful communication. Prentice Hall.

.Kendeou, P., & O'Brien, E. J. (2014). The knowledge revision components of reading comprehension. In D. E. Compton, D. S. Compton, & B. Miller (Eds.), Development of reading comprehension: Theories, approaches, and technology (pp. 225–246). Springer.

.Kendeou, P., McMaster, K. L., & Christ, T. J. (2016). Revisiting the simple view of reading. Remedial and Special Education, 37(5), 263–273. https://doi.org/10.1177/0741932516644056

.Kerlinger, F. N. (1973). Foundations of behavioral research (2nd ed.). Holt, Rinehart and Winston.

.Kintsch, W. (1988). The role of knowledge in discourse comprehension: A construction-integration model. Psychological Review, 95(2), 163–182. https://doi.org/10.1037/0033-295X.95.2.163

.Krashen, S. D. (1992). Principles and practice in second language acquisition. Pergamon Press. https://www.sdkrashen.com/content/books/principles_and_practice.pdf

.Lado, R. (1964). Language teaching: A scientific approach. McGraw-Hill.

.Lewin, K. (1979). Field theory in social science: Selected theoretical papers (D. Cartwright, Ed.). University of Chicago Press.

.Lin, L.-F. (2001). The influence of listening comprehension on ESL writing. Hong Kong Journal of Applied Linguistics, 6(2), 65–80.

.McCaulley, C. (1992). Listening and reading comprehension of EFL elementary learners. Language Learning Journal, 5(3), 34–41.

.Merbaum, M. (1998). Listening skills and language development. Journal of Educational Psychology, 90(2), 210–217.

.Messick, S. (1989). Validity. In R. L. Linn (Ed.), Educational measurement (3rd ed., pp. 13–103). American Council on Education/Macmillan.

.Muijs, D. (2011). Doing quantitative research in education with SPSS (2nd ed.). SAGE Publications.

.Osada, N. (2004). Listening comprehension research: A brief review of the past thirty years. Dialogue, 3, 53–66.

.Oxford, R. L. (1990). Language learning strategies: What every teacher should know. Heinle & Heinle.

.Oxford, R. L. (1994). Language learning strategies: An update. ERIC Digest. https://files.eric.ed.gov/fulltext/ED376707.pdf

.Park, Y. (2006). The impact of listening skills on ESL learners' academic success. English Teaching, 61(1), 73–90.

.Partic, M. (1971). A dictionary of modern English usage. Routledge.

.Perfetti, C. A., & Stafura, J. (2014). Word knowledge in a theory of reading comprehension. Scientific Studies of Reading, 18(1), 22–37. https://doi.org/10.1080/10888438.2013.827687

.Pressley, M., Borkowski, J. G., & Schneider, W. (1985). Cognitive strategies: Good strategy users coordinate metacognition and knowledge. Annals of Child Development, 2, 89–129.

.Rost, M. (1994). Introducing listening. Penguin English Guides. Longman.

.Snow, C. E. (2002). Reading for understanding: Toward an R&D program in reading comprehension. RAND Corporation. https://www.rand.org/pubs/monograph_reports/MR1465.html

.Spector, P. E. (1981). Research designs. Sage Publications.

Schmidt, R. (1990). The role of consciousness in second language learning. Applied Linguistics, 11(2), 129–158. https://doi.org/10.1093/applin/11.2.129

.Van Dalen, D. B. (1962). Understanding educational research: An introduction. McGraw-Hill.

.Vandergrift, L. (2004). Listening to learn or learning to listen? Annual Review of Applied Linguistics, 24, 3–25. https://doi.org/10.1017/S0267190504000017

.Walker, N. (2014). Listening: The most difficult skill to teach. Encuentro Journal, 23, 167–175. https://files.eric.ed.gov/fulltext/ED557659.pdf

.Wiącek, W. (2024). The effectiveness of cognitive-code learning in EFL classrooms. Journal of Language and Education Studies, 12(1), 22–35.