

The Effect of Overlapping waves strategy to Enhance Reading Comprehension among Iraqi EFL Preparatory School Students

Fatima Hussien Ali

College of Basic Education / University of Diyala

Corresponding author: basiceng_gm_24_@uodiyala.edu.iq

Sundus Talib Hassan

College of Basic Education / University of Diyala

Corresponding author: basiceng5te@uodiyala.edu.iq

Date of research submission : 25/4/2026

Date of publication acceptance : 29/6/2026

Date of publication :29/8/2026



[Creative Commons Attribution 4.0 International License](https://alfatehjournal.uodiyala.edu.iq/index.php/jfath/index)

<https://alfatehjournal.uodiyala.edu.iq/index.php/jfath/index>

<https://alfatehjournal.uodiyala.edu.iq/index.php/jfath/copyright>

Abstract

Reading comprehension skill stands out as a pivotal component of linguistic competence. On the other hand, the continuous development of pedagogical strategies plays a vital role in enhancing students' academic performance. Given the challenges faced by English as a Foreign Language (EFL) learners in Iraq, numerous strategies have emerged, including the Overlapping Waves Strategy. Accordingly, this study aims to determine the effectiveness of the Overlapping Waves Strategy in enhancing reading comprehension among preparatory school students in Iraq. To achieve the objective of the study, a random sample of (90) female students was selected from the fourth-grade (scientific branch) in Diyala Governorate for the academic year 2025-2026. The sample was randomly distributed into two groups: (A) The Experimental Group: Consisting of (45) students who studied according to the Overlapping Waves Strategy, (B) The Control Group: Consisting of (45) students who studied according to the conventional method. In addition, a pilot sample of (25) students

was selected from another school in the same governorate. The researcher designed the Pre-test and Post-test as the primary tools for the study. The two groups were equalized across relevant variables, and all collected data were subjected to statistical analysis. The results revealed that there were statistically significant differences between the control and experimental groups, in favor of the experimental group.

Keywords: EFL Learners, Reading Comprehension, Effectiveness, Overlapping Waves Strategy

أثر استراتيجيات الأمواج المتداخلة في تعزيز الاستيعاب القرائي لدى طلبة اللغة الانكليزية ، لغة اجنبية في المدارس الإعدادية في العراق

فاطمة حسين علي عباس
كلية التربية الاساسية / جامعة ديالى
سندس طالب حسن

كلية التربية الاساسية / جامعة ديالى

تاريخ استلام البحث : 2026/4/25

تاريخ قبول النشر : 2026/6/29 - تاريخ النشر 2026/8/29



[Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

<https://alfatehjournall.uodiyala.edu.iq/index.php/jfath/index>

<https://alfatehjournall.uodiyala.edu.iq/index.php/jfath/copyright>

المستخلص

تُبرز مهارة فهم المقروء كمكون محوري للكفاية اللغوية. ومن ناحية أخرى، يلعب التطوير المستمر للاستراتيجيات التربوية دوراً حيوياً في تعزيز الأداء الأكاديمي للطلبة. ونظراً للتحديات التي يواجهها متعلمو اللغة الإنجليزية كلغة أجنبية (EFL) في العراق، ظهرت استراتيجيات عديدة، بما في ذلك استراتيجيات الأمواج المتداخلة. وعليه، تهدف هذه الدراسة إلى تحديد مدى فاعلية استراتيجيات الأمواج المتداخلة في تعزيز الفهم القرائي لدى طلبة المرحلة الإعدادية في العراق. ولتحقيق هدف الدراسة، تم اختيار عينة عشوائية مكونة من (90) طالبة من الصف الرابع الإعدادي (الفرع العلمي) في محافظة ديالى للعام الدراسي 2025-2026. وتم توزيع العينة عشوائياً إلى مجموعتين: (أ) المجموعة التجريبية: وتكونت من (45) طالبة درسن وفقاً لاستراتيجية الأمواج المتداخلة، و (ب) المجموعة الضابطة: وتكونت من (45)

طالبة درسن وفقاً للطريقة التقليدية. بالإضافة إلى ذلك، تم اختيار عينة استطلاعية مكونة من (25) طالبة من مدرسة أخرى في نفس المحافظة لضمان متطلبات الدراسة. أجرى الباحث الاختبار القبلي والبعدي كأدوات أساسية للدراسة. وتمت مكافأة المجموعتين عبر المتغيرات ذات الصلة، وخضعت جميع البيانات المجموعة للتحليل الإحصائي. وأظهرت النتائج وجود فروق ذات دلالة إحصائية بين المجموعتين الضابطة والتجريبية، ولصالح المجموعة التجريبية. **الكلمات المفتاحية:** متعلموا اللغة الإنجليزية لغة أجنبية، الفهم القرائي، الفاعلية، استراتيجيات الأمواج المتداخلة

1. The Problem and Its significance

Foreign language instruction is seen as a practical and scientific need. In contemporary world, learning foreign languages has become an urgent necessity and a fundamental requirement. Today, the world has turned into a small global village where people communicate effortlessly due to modern developments. Furthermore, studying foreign languages enables individuals to keep pace with global advancements and enhances cultural openness (Nasrallah, 2022). Reading is considered the most critical skill in English language learning, as it enables students to develop their concepts and adapt to the outside world (Jusrianti, 2022). Because it exposes students to sentence patterns, real-world language situations, and pertinent vocabulary usage, reading is an essential ability for both academic and professional success (Grabe, 2009)

Numerous Iraqi studies have indicated a significant deficiency in reading comprehension skills among students in Iraqi schools and this is because of many factors : For instance, students face substantial challenges in grasping the implicit meaning of texts. This weakness is attributed to the continued reliance on traditional instructional methods that depend on a single 'wave'—namely, rote memorization and literal translation. Furthermore, the decline in reading comprehension is also attributed to a significant deficiency in vocabulary acquisition.

From another perspective, reading comprehension challenges can be viewed through the lens of instructional practices. Many teachers continue to rely on outdated methods and fail to adopt advanced strategies that could enhance students' opportunities

for text comprehension. Disengaged readers, on the other hand, are less likely to employ techniques like summarizing or asking questions. In addition, the 'Affective Filter' is a mental barrier that keeps language learners from making the most of the information they are exposed to. The filter is "up" and the student may not comprehend what he/she hears or reads when motivation is low or fear is high (Krashen, 2004).

In light of the various studies and sources mentioned, which have addressed multiple dimensions of learners' difficulties in reading comprehension, it can be concluded that reading deficiency is a cumulative process. Consequently, there is an urgent need for early intervention and the implementation of innovative strategies to enhance reading comprehension skills.

1.1 Aim of the study

The current study aims to find out the Effect of Overlapping Waves Strategy on enhance reading comprehension among Iraqi EFL preparatory school students .

1.2 Hypothesis

There is no statistically significant difference at the (0.05) level between the mean scores of the experimental group students who are taught reading comprehension by using the overlapping waves strategy and those of the control group students who are taught by using the conventional method.

1.3 Limitation of the study

The current study is limited to fourth-grade scientific preparatory students in Diyala Governorate during the academic year 2025/2026.

2. Overlapping Waves Strategy

Learning is a continuous process rather than a static one. Thus, as learners progress over time, they move from simpler, less efficient strategies to more complex and efficient ones, reflecting their cognitive and perceptual development .Various theories have explained the cognitive development of individuals, and among the most important of these theories is Jean Piaget's theory.

From Jean Piaget's perspective, cognitive development in children occurs through qualitative changes in thinking patterns

rather than simply an increase in the amount of information a child receives throughout their successive developmental stages. In addition Jean Piaget describes the cognitive development of individuals in four stages (sensorimotor , Preoperational , Concrete operational , Formal operation) (Barrouillet, 2015) .

Lev Vygotsky (1978) argued that cognitive development is influenced more by educational support, social interaction, and guidance than by the individual's internal growth .Similarly, Bruner (1960) argued that Piaget underestimated the role of structured learning. Furthermore, Piaget believed that individuals could only learn certain concepts upon reaching a specific stage, but according to Brown, if a concept is formulated appropriately, it can be understood and taught.

One of the most prominent of these influential theories is Gage's theory in education and teaching. Gage suggests that education through structured teaching, which is under necessary conditions, can be systematic. Gage also identified 9 educational events and each event corresponds to a cognitive process (Gagné, 1985) . While Gagné's theory outlined the nine educational events that are sequentially related to an individual's cognitive growth and Piaget established the groundwork for cognitive development in fixed phases, these theories failed to explain how people transition from one understanding to another.

According to (Lawson, Baron & Siegel, 1974) numerous routes have been proposed. In certain passages, people are described as vacillating between various answers and logic during the transitional period; in other passages, they are described as frequently stating that they do not know; and in still other passages, they are described as making accurate judgments during transition without providing an explanation. The majority of theories of cognitive development do not fully account for the diversity of people's thought processes (Opfer & Siegler, 2004).

Compared to those with fewer strategies, individuals who possess and employ a variety of strategies are better able to satisfy the needs of various challenges as well as their strengths and limitations (Siegler, 1994). These significant occurrences

are obscured by theories that reduce cognitive development to phases and principles, where each new cognitive structure replaces the previous one.

Siegler in 2000 introduced OW, sometimes referred to as the metaphor of cognitive progress . He asserted that the staircase metaphor of cognitive development used by stage theorists (such as Piaget) disregarded the extensive variation that occurs both within and between developmental stages. Siegler created this theory of cognitive development with the express purpose of advancing the notion of cognitive variety (McLeod, 2024) .

2.1 Assumptions Of Overlapping waves

The overlapping waves theory (Siegler, 1996) is predicated on three premises: (a) youngsters think in a variety of ways about most phenomena at any given time.(b) These varied ways of thinking compete with each other over longer periods of time rather than just during brief shift periods.(c) Cognitive development involves gradual changes in the frequency of these ways of thinking as well as the adoption of more advanced ways of thinking.

2.2 Factors Influencing Strategy Selection in the OW

The following are the five factors that influence the selection of the appropriate strategy:

1-Strategy Efficiency (Speed and Accuracy) : learners transition gradually from slower strategies to more accurate and efficient ones, certainly with practice and sufficient experience, which reflects the increase in the learners' cognitive awareness over time (Siegler & Pyke, 2013).

2- Strategy Strength (Based on Previous Success - Global Strength): Naturally, when a certain strategy succeeds in solving problems and tasks consistently, learners tend to adopt it in subsequent tasks based on its prior success (Siegler & Shrager, 1984).

3. Confidence Criterion: As the learner's confidence in the new strategy increases, determining the criterion becomes easier to reinforce the optimal use of the new strategy (Siegler, 1996).

4-Task Demands and Difficulty : Strategy selection is significantly influenced by the characteristics of the task.

Different tasks require different strategies, and learners navigate from one strategy to another accordingly. (Siegler, 2000).

5-Strategy Discovery and Exploration :This factor centers on the innate drive of learners and their tendency to explore. When learners face unfamiliar problems, they tend to discover new, effective strategies that suit the problem. (Siegler, 2006) .

2.3 Elements of OW

The Overlapping Waves Strategy describes strategic development through five key processes: First, the 'Acquisition' of new strategies, which is the foundational step. This is followed by 'Mapping' the strategy onto new problems, 'Strengthening' the strategy, and 'Refining' strategy selection. Finally, 'Executing' the strategy efficiently (Chen & Siegler, 2000) .

2.4 Reading comprehension

Habush (2010) demonstrates that in order to extract meaning, the reading process must include visual decoding, mental processing of the decoded information, and relating it to the reader's experience. It is incorrect for readers to concentrate on learning patterns and improving their fluency since doing so suggests that reading is a passive process or just deciphering letters or words.

Another way to think of reading is as a communication process between the encoder and the decoder. All language elements must be recognized, whether they are implicit (such as implication, reference, inference, etc.) or explicit (such as letters, morphemes, words, phrases, clauses, sentences, and the entire text) (Keenan et al., 2008). Making understanding of what one reads is known as comprehension; a reader who does this is engaged. In order to grasp a book, comprehension is a complicated process that requires prior knowledge (Mawlood, 2022).

2.5 Models of RC

There are three models of reading comprehension, each model depending on how the reader interprets the written text :

1-Bottom - up Model :The process of translating written symbols into their auditory equivalents is known as the bottom-

up paradigm of reading. According to this perspective, in order to attain understanding, the reader begins with the smallest units—letters—and progresses to bigger units—words, sentences. Print is translated into speech, which is followed by meaning (Gough, 1972) . The bottom-up model's uses in the classroom are focused on vocabulary knowledge, word identification, and grammar skills—all of which have been identified as critical to EFL/ESL reading comprehension—where coherent devices play a major role (Park, 2004).

2- Top- Down Model :According to Eskey (2005), a top-down reading paradigm emphasizes the contributions that readers make to the reading process, such as past experiences and knowledge. Since the reader already has certain preconceived notions about the meaning of the text, comprehension begins in the reader's head and moves "from brain to text" rather than "text to brain ."Reader-driven" or "conceptually driven" are other names for a top-down processing approach in which pupils' schema begins with the written text and propels comprehension .

The fluent reader is seen in the accompanying picture actively making predictions or testing hypotheses as they move through a book. According to this perspective, reading is a type of "psycholinguistic guessing game" (Goodman , 1967).

3-Interactive Model of Reading : According to Grabe (1988), the interactive model of reading presupposes that the availability of abilities at all levels in an interactive manner is necessary for processing and analyzing the text . Furthermore, according to Wallace (1992), word recognition is made easier by the simultaneous integration of orthographic, lexical, syntactic, semantic, and message board or pattern synthesizer information.

2.6 Comprehension Level

There are four stages of comprehension :

1.Literal Comprehension :Understanding the concepts and details in the material explicitly is a component of literal comprehension. The primary concept, specifics, cause, effect, and order are the foundation of literal comprehension. By comprehending the vocabulary, phrase meaning, and paragraph

meaning, one may acquire basic literal comprehension. The literal level of reading comprehension is the easiest to understand .(Brown, 2007).

2.Interpretative Comprehension :The capacity to go beyond what is said explicitly and comprehend the study by searching for its inner meaning is known as interpretative comprehension; readers recognize and extract concepts and meaning from a text that is plainly presented. According to Brown (2004), interpretive comprehension is the capacity to deduce or infer meaning from a text and comprehend concepts that are information not mentioned clearly in the passage.

3.Critical comprehension : Evaluating printed information through critical understanding necessitates comparing the concepts found with established norms and determining their appropriateness and validity. Pupils are expected to evaluate the materials' worth or the writer's style, aim, and viewpoint (Erika ,2015).

4.Creative Comprehension : Appreciation, which is based on responding both artistically and emotionally to the writer's content, language use, and character development, is referred to as creative comprehension. Additionally, students could be invited to reflect on what they are reading and use their imaginations (Erika ,2015).

2.7 Type and sub- skill in Reading

1.Intensive and Extensive Reading

Both extensive and intensive reading are popular methods for teaching and learning both native and foreign languages. Intensive reading is described by Brown (2001) as a classroom-based practice where students concentrate on the linguistic or semantic aspects of a material. In order to comprehend literal meaning, implications, rhetorical links, and other things, intensive reading draws attention to grammatical forms, discourse markers, and other surface structural features.

On the other hand , an extended reading strategy enables students to read, read, and read more while teaching reading in a foreign language . According to Nation (2009), reading can help children learn and become acquainted with new terms and

structures. In a similar vein, Willis (2008) notes that reading widely gives kids the chance to see new terms in rich settings.

2-Skimming and Scanning

Skimming is defined as "reading quickly or skimming quickly through the text to get a main idea of what the text is about" (Simensen, 2007). Readers should be taught to identify facts that are presented in sentences as opposed to single words while skimming (Grellet, 1981).

On the other hand , Scanning refers the reader's quick reading of certain concepts in a book, such as technical, scientific, or professional contents (Nuttall ,1996).According to Grellet (1981), Harmer (1991), and Williams (1984), readers who are scanning just attempt to locate specific information by letting their eyes roam over the text until they discover what they are searching for.

3- Oral and Silent Reading

Saying a written text out loud is known as reading aloud, Reading aloud is a helpful exercise for learning the language's sounds and stress patterns (Ur, 1996). In Addition, it is the process of reading aloud any written material, which typically occurs while reading a report, reporting meeting minutes, reading directions, or reading anything from a newspaper. The reader must read slowly, follow the correct word order, avoid repetition, and pronounce words correctly (Mendoza & Ortega-Dela Cruz, 2024).

On the other hand , according to Grellet (1981), the most efficient way to read for comprehension is silent reading. When the reader is at ease, they can read silently for pleasure or on their own. Because it encourages intense focus when reading a written document, it is thought to enhance comprehension. It emphasizes the text's content, which people may employ in their daily lives. SSR stands for Sustained Silent Reading and is also referred to as Self-Selected Reading (SSR) in order to encourage silent reading and apply it in the classroom. (Mendoza & Ortega-Dela Cruz, 2024).

2.8 Previous studies

1-"The impact of the strategy of the overlapping waves in the development of mental reasoning skills of students" (Al-Zamili & Karim Hussein, 2018).

Al-Zamili (2018) investigated the effectiveness of the overlapping waves strategy in developing students' mental reasoning skills. Using a quasi-experimental design with partial control, the researcher compared an experimental group taught via the overlapping waves strategy with a control group taught using the traditional method. After ensuring equivalence between the two groups across various variables, a t-test for independent samples was conducted. The results demonstrated that the experimental group significantly outperformed the control group, indicating the strategy's efficacy in enhancing high-level cognitive and reasoning abilities.

2- "The effect of using overlapping waves strategy on lateral thinking of fourth grade students scientific branch in math " (Atif ,2021)

Atif (2021) investigated the effect of the overlapping waves strategy on the lateral thinking of 76 fourth-grade scientific branch students in mathematics. Using a quasi-experimental design with a post-test, the study revealed a statistically significant difference in favor of the experimental group. The researcher concluded that the overlapping waves strategy effectively enhanced students' lateral thinking compared to the traditional method.

3- "The effectiveness of overlapping waves theory in achievement and academic buoyancy of ESP vocational school female students in spelling and vocabulary " (Baan ,2025)

This study investigated the effectiveness of the Overlapping Waves Theory on the achievement and academic buoyancy of 62 Iraqi female ESP vocational students in spelling and vocabulary. A quasi-experimental design was employed, with 50 students divided equally into an experimental group (taught via the theory) and a control group (taught via the prescribed method). Statistical analysis of the post-test data revealed that while the theory was significantly effective in enhancing

vocabulary acquisition and overall academic buoyancy, it did not show a significant impact on spelling achievement. The study concluded that the Overlapping Waves Theory is a potent tool for boosting students' psychological resilience and vocabulary mastery in ESP contexts.

4- "Perceived Reading Comprehension Difficulties and Academic Performance of Intermediate Learners" (Lorenda et al. , 2025)

Lorenda, et al. (2025) explored the relationship between perceived reading comprehension difficulties and the academic performance of 41 Grade 5 pupils. Employing a descriptive correlational research design with a complete enumeration sampling technique, the study utilized Pearson r correlation for data analysis. The findings revealed that moderate reading comprehension difficulties significantly impact pupils' academic outcomes. The researchers emphasized the necessity of targeted interventions and scaffolded support to strengthen comprehension skills as a prerequisite for academic success across all subject areas.

5- "The influence of association techniques on developing Iraqi EFL fourth preparatory school learners' reading skills " (Enas ,2025)

Enas (2025) examined the effect of association techniques on the reading skills of 82 Iraqi EFL fourth-preparatory learners. Using an experimental design with pre- and post-tests, the study focused on visual imagery and mnemonic devices. Results indicated that the experimental group significantly outperformed the control group, showing marked improvements in selective and interactive reading, vocabulary retention, and metacognitive awareness.

6- "Fostering better reading comprehension in junior high school students: exploring pre-reading activities and interest levels" (Nindi & Ratmanida ,2025)

Nindi and Ratmanida (2025) investigated the impact of reading engagement and preparatory tasks on students' comprehension. Through an experimental study involving a 30-item comprehension test and a reading interest survey, data were

analyzed using T-tests and ANOVA. The findings revealed a statistically significant difference in favor of the experimental group, demonstrating that pre-reading activities effectively enhance students' understanding and interaction with the text.

3.Methodology and Results

An experimental design acts as a guide for allocating experimental units to treatment levels and carrying out the statistical analysis necessary for the plan, according to Kirk (2009). The current study's necessary experimental design is known as "Randomized Control Group Pretest-Posttest Design." As a result, the study's sample consists of the two groups of fourth-grade science preparatory school students. Table 1 provides an illustration of the study's experimental design.

Table (1) The experimental Design

Groups	Pretest	Treatment	posttest
Experimental	Achievement test	Overlapping waves strategy	Achievement test
Control	Achievement test	Prescribed method of teaching	Achievement test

3.1 Population and Sample

The population of the current study consists of EFL Iraqi preparatory school students at the fourth-scientific grade in Diyala Governorate. To ensure an unbiased representation, Al-Zumar Preparatory School for Girls was randomly selected as the target venue. A sample of 90 students was chosen and divided equally into two groups: 45 students in Experimental Group A, and 45 students in Control Group B, as illustrated in Table 2

Table (2) The sample of the study

Group	Sections	No.	Total
Experimental	A	45	90
Control	B	45	

3.2 The Teaching Material

The researcher followed English textbook for the fourth-scientific grade adopted by the Ministry of Education for the 2025/2026 academic year as the material for the current study.

3.3 Instrument of the study

As a data collection tool for this study, The researcher chose a post-test tool that included an unseen text selected from the internet according to the appropriate cognitive level for the fourth-grade preparatory students.

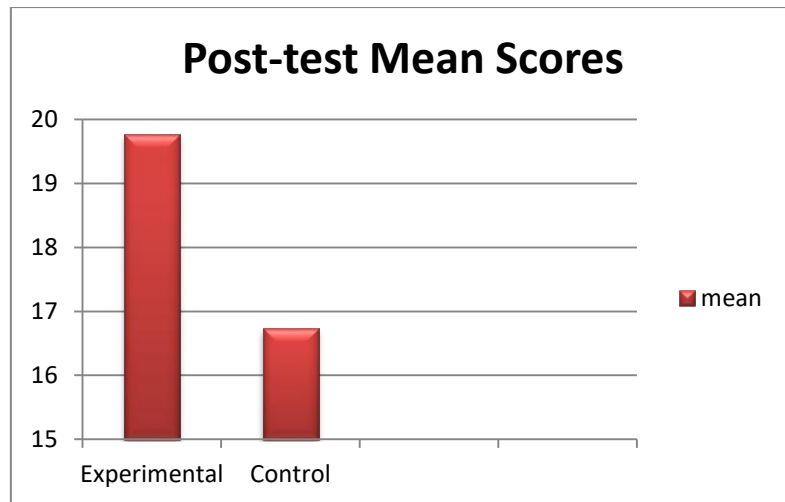
3.4 Results and Discussion

The mean scores of the control and experimental groups were 16.73 and 19.76, respectively in the Post-test .According to the statistical manipulation of the data obtained through the application of the Post-test . A computed t-value of 2.589 is displayed using the t-test procedure for two independent samples, which is higher than the critical value of 1.98 at a significance level of 0.05 and 88 degrees of freedom.

Table (3) Post- test Scores for Control and Experimental Group.

	Gro ups	N	Mean	Std. Devia tion	df	Com pute d t- Valu e	Criti cal t- Valu e	Sig. 0.05
Post- test	Exp	45	19.76	5.92	88	2.589	1.98	0.01
	Con	45	16.73	5.4				

To determine the effect size of the investigated strategy on students' performance, the Eta-Squared (η^2) formula was employed. It yielded a value of approximately 0.07, which indicates a moderate to large effect. Consequently, it can be concluded that the OW strategy has a significant impact on Iraqi EFL fourth-preparatory grade students.



The experimental group outperformed the control group significantly.

The superiority of the experimental group is attributed to the cognitive nature of the Overlapping Waves (OW) Strategy, which encourages learners to employ multiple strategies simultaneously. This finding aligns with the studies of Al-Zamili (2018) and Atif (2021). Furthermore, these results are consistent with Baan (2025), who emphasized the role of cognitive flexibility in enhancing academic performance. The OW strategy did not only contribute to the development of reading skills but also fostered learners' psychological adaptation when encountering complex English texts. This suggests that the Overlapping Waves Strategy offers a practical solution to bridging gaps in EFL instruction within the Iraqi context, echoing the previous findings of Lorenda et al. (2025).

3.7 Conclusions

In relation to the current research, the study aimed to investigate the effect of the Overlapping Waves Strategy in enhancing reading comprehension among preparatory school students in Iraq. Based on the findings, which showed significant differences in favor of the experimental group, several conclusions can be drawn: First, the effectiveness of the Overlapping Waves Strategy in developing reading comprehension among fourth-grade scientific branch students in preparatory schools. Second, it can be stated that this strategy shifts the teacher-centered curriculum toward a student-centered approach, granting learners the autonomy and flexibility to

handle English texts more smoothly. Finally, this strategy confirms that Iraqi learners can achieve academic excellence and success by employing a variety of strategies simultaneously to reach a deep and comprehensive understanding. Ultimately, this study serves as a fundamental pillar that can be relied upon in teaching English as a Foreign Language (EFL) in Iraq, while reinforcing the idea that success lies in how students think about the texts they read.

3.8 Recommendations

1. Iraqi English language teachers should be encouraged to implement the Overlapping Waves Strategy in their classrooms, moving away from relying on traditional methods that focus on rote memorization and literal translation of the text.
2. The Ministry of Education and educational training should organize workshops and training programmers to introduce Iraqi EFL teachers to the Overlapping Waves Strategy, as it is a cognitive strategy that relies on the "overlapping" of processes during the reading task.
3. English language curriculum designer in Iraq should incorporate educational activities that require the simultaneous use of multiple strategies within the learning process.
4. Teachers should integrate engaging and up-to-date supplementary materials, such as illustrations and educational videos, which serve to enhance students' motivation toward the learning process.
5. To achieve better text comprehension, students should be granted sufficient time to enable them to increase the repertoire of strategies they employ during the reading task.

References

- 1.-Al-Zamili, K. H., Al-Juhaishi, A. J., & Al-Masoudi, M. H. (2018). *The impact of the strategy of the overlapping waves in the development of mental reasoning skills of students*. Journal of Babylon Center for Humanities Studies.
- 2.-Barrouillet, P. (2015). *Theories of cognitive development: From Piaget to today*. Developmental Review, 38, 1-12.

- 3.-Brown, H. D. (2001). *Teaching by principles: An interactive approach to language pedagogy* (2nd ed.). Addison Wesley Longman, Inc.
- 4.-Brown, H. D. (2004). *Language assessment: Principles and classroom practices*. Pearson Education.
- 5.-Brown, H. D. (2007). *Teaching by principles: An interactive approach to language pedagogy* (3rd ed.). San Francisco State University.
- 6.-Chen, Z., & Siegler, R. S. (2000). *Across the great divide: Bridging the gap between understanding of toddlers' and older children's thinking*. Monographs of the Society for Research in Child Development, 65(2).
- 7.-Derya, A. A. A. (2021). *The effect of using overlapping waves strategy on lateral thinking of fourth grade students scientific branch in math*. Al-Basic Education College Magazine for Educational and Human Sciences, 13(54), 1–17.
- 8.-Erika, S. (2015). *Improving students' reading comprehension achievement by using KWL strategy*. Journal of English Linguistics Research, 4(3), 5-12.
- 9.-Eskey, D. E. (2005). Reading in a second language. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 563-579). Lawrence Erlbaum.
10. -Gagné, R. M. (1985). *The conditions of learning and theory of instruction* (4th ed.). Holt, Rinehart & Winston.
11. -Goodman, K. S. (1967). Reading: A psycholinguistic guessing game. *Journal of the Reading Specialist*, 4(1), 126-135.
12. -Gough, P. B. (1972). *One second of reading*. In J. F. Kavanagh & I. G. Mattingly (Eds.), *Language by ear and by eye* (pp. 331–358). MIT Press.
13. -Grabe, W. (1988). Reassessing the term interactive. In P. Carrell, J. Devine, & D. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 56-70). Cambridge University Press.
14. -Grabe, W. (2009). *Reading in a second language: Moving from theory to practice*. Cambridge University Press.

15. -Grellet, F. (1981). *Developing reading skills: A practical guide to reading comprehension exercises*. Cambridge University Press.
16. -Haboush, Z. (2010). *The effectiveness of using a programme based on multiple intelligences theory on English grader's English reading comprehension skills* [Unpublished master's dissertation]. Islamic University of Gaza.
17. -Harmer, J. (1991). *The practice of English language teaching*. Longman.
18. -Hassan, E. F. (2025). *The influence of association techniques on developing Iraqi EFL fourth preparatory school learners' reading skills* [Master's thesis, University of Babylon].
19. -Jusrianti. (2022). *The students' reading comprehension by using comic book at SMPN 1 Lembang Pinrang* [Undergraduate thesis, State Islamic Institute (IAIN) Parepare].
20. -Keenan, J. M., Betjemann, R. S., & Olson, R. K. (2008). *Reading comprehension tests vary in the skills they assess: Differential dependence on decoding and oral comprehension*. *Scientific Studies of Reading*, 12(3), 281-300.
21. -Kirk, R. E. (2009). *Experimental design*. In *Sage handbook of quantitative methods in psychology* (pp. 23-45). SAGE Publications.
22. -Krashen, S. D. (2004). *The power of reading: Insights from the research* (2nd ed.). Libraries Unlimited.
23. -Lawson, G., Baron, J., & Siegel, L. (1974). *The role of number and length cues in children's quantitative judgments*. *Child Development*, 45(3), 731-736.
24. -Madrid, L. M., Balawag, L. R. A., & Franca, G. C. (2025). *Perceived reading comprehension difficulties and academic performance of intermediate learners*. *Asian Journal of Education and Social Studies*, 51(6), 1373-1381. <https://doi.org/10.9734/ajess/2025/v51i62082> .
25. -Mawlood, A. A., & Abbas, N. J. (2022). *Teachers' attitudes towards reciprocal teaching strategies for improving high school students' reading skills*. *Journal of Language Studies*, 5(4), 117-135.

26. -McLeod, S. (2024). *Piaget's theory and stages of cognitive development*. Simply Psychology.
27. -Mendoza, K. M. M., & Ortega-Dela Cruz, R. A. (2024). *Silent and oral reading methods on improving English reading comprehension among generation alpha pupils*. Journal of Childhood, Education & Society, 5(1), 120-133. <https://doi.org/10.37291/2717638X.202451306> .
28. -Mohammed, B. S. A. (2025). *The effectiveness of overlapping waves theory in achievement and academic buoyancy of ESP vocational school female students in spelling and vocabulary* [Master's thesis, University of Baghdad].
29. -Nasrallah, L. A. (2022). *Reading comprehension skills in the English language and their relationship with creative thinking among elementary school students in Kuwait*. Journal of the Faculty of Education, 38(10). <https://doi.org/10.21608/MFES.2022.287416> .
30. -Nuttall, C. (1996). *Teaching reading skills in a foreign language*. Heinemann.
31. -Opfer, J. E., & Siegler, R. S. (2004). *Revisiting preschoolers' living things concept: A microgenetic analysis of conceptual change in basic biology*. Cognitive Psychology, 49(4), 301-332.
32. -Park, G. P. (2004). *Comparison of L2 listening and reading comprehension by university students learning English in Korea*. Foreign Language Annals, 37(4), 575-585.
33. -Siegler, R. S., & Shrager, J. (1984). *Strategy choices in addition and subtraction: How do children know what to do?* In C. Sophian (Ed.), *Origins of cognitive skills* (pp. 229–293). Erlbaum.
34. -Siegler, R. S. (1994). *Cognitive variability: A key to understanding cognitive development*. Current Directions in Psychological Science, 3(1), 1-5.
35. -Siegler, R. S. (1996). *Emerging minds: The process of change in children's thinking*. Oxford University Press.
36. -Siegler, R. S. (2000). *The rebirth of children's learning*. Child Development, 71(1), 26-35. <https://doi.org/10.1111/1467-8624.00115> .

37. -Siegler, R. S. (2006). Microgenetic studies of self-explanation. In W. Damon, R. M. Lerner, D. Kuhn, & R. S. Siegler (Eds.), *Handbook of child psychology: Vol. 2. Cognition, perception, and language* (6th ed., pp. 464–510). Wiley.
38. -Siegler, R. S., & Pyke, A. A. (2013). *Developmental and individual differences in strategy choice*. *Psychological Science*, 24(6), 1–8.
39. -Simensen, A. M. (2007). *Teaching a foreign language: Principles and procedures* (2nd ed.). Fagbokforlaget.
40. -Ur, P. (1996). *A course in language teaching: Practice and theory*. Cambridge University Press.
41. -Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
42. -Wallace, C. (1992). *Reading*. Oxford University Press.
43. -Williams, E. (1984). *Reading in language classroom*. McMillan Publisher Ltd.
44. -Willis, J. (2008). *Teaching the brain to read: Strategies for improving fluency, vocabulary, and comprehension*. Association for Supervision and Curriculum Development.