

## The Impact of Flipped Instruction and Reciprocal Teaching on Reading Comprehension Skills

*Tersine Öğretim ve Karşılıklı Öğretimin Okuma Anlama Becerileri Üzerindeki Etkisi*

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### Araştırma Makalesi

#### Süreç

Geliş Tarihi: 02.04.2024

Kabul Tarihi: 05.06.2025

Yayın Tarihi: 30.06.2025

#### Benzerlik

Bu makale, en az iki hakem tarafından incelenmiş ve intihal yazılımı ile taranmıştır.

#### Değerlendirme

Ön İnceleme: İç hakem (editörler).

İçerik İnceleme: İki dış hakem/Çift taraflı körleme.

#### Telif Hakkı & Lisans

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#### Yapay Zeka Kullanımı

Bu çalışmanın hazırlanma sürecinde yapay zeka tabanlı herhangi bir araç veya uygulama kullanılmamıştır. Çalışmanın tüm içeriği, yazar(lar) tarafından bilimsel araştırma yöntemleri ve akademik etik ilkelere uygun şekilde üretilmiştir. Amina Abdelhadi

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#### Çıkar Çatışması

Çıkar çatışması beyan edilmemiştir.

#### Finansman

Bu araştırmayı desteklemek için dış fon kullanılmamıştır.

#### Yayıncı

Published by Mehmet ŞAHİN Since 2016- Akdeniz University, Faculty of Theology, Antalya, 07058 Türkiye

#### Atıf

Abdelhadi, A. (2025). Tersine öğretim ve karşılıklı öğretimin okuma anlama becerileri üzerindeki etkisi. *Turkish Academic Research Review*, 10/2, 349-361, <https://doi.org/10.30622/tarr.1463321>

### Öz

Tersine çevrilmiş metodolojinin etkinliği, büyük ölçüde eğitimcilerin öğrencilerin akademik zorluklarını ele alan ders planları tasarlama ve uygulama becerilerine bağlıdır. Karşılıklı öğretim, okuduğunu anlama becerisini geliştirmede umut vaat etse de tersine çevrilmiş ders planlarına entegrasyonu henüz yeterince araştırılmamıştır. Bu çalışma, rastgele seçilen 42 lise öğrencisinin okuduğunu anlama becerisini geliştirmek için karşılıklı öğretimin tersine çevrilmiş sınıf çerçevesine nasıl entegre edilebileceğini inceleyerek bu boşluğu ele almaktadır. Yarı deneysel bir tasarım kullanan çalışma, öğrencilerin ders öncesi ve sonrası geri bildirim puanlarını karşılaştırmak için eşleştirilmiş örneklem t-testi kullanmıştır. Geri bildirim, beş puanlık Likert ölçeğinde ön bilgi, motivasyon ve eleştirel düşünmeyi değerlendiren anonim formlar aracılığıyla toplanmıştır. Tedavi öncesinde, öğrencilerin dijital araçlara ve internete, özellikle akıllı telefonlar aracılığıyla erişimleri doğrulanmıştır. Müdahale üç aşamadan oluşmuştur: geleneksel dersin ardından temel geri bildirim, karşılıklı öğretim stratejilerini içeren tersine öğretim yoluyla tedavi ve tedavi sonrası geri bildirim. Sonuçlar, istatistiksel olarak anlamlı bir iyileşme ortaya koymuş ve bu da sıfır hipotezinin reddedilmesine yol açmıştır. Tedavi sonrası puanlardaki artış, okuduğunu anlama zorluklarının üstesinden gelmek için tersine derslerde karşılıklı öğretimin etkinliğini vurgulamaktadır. Bu bulgular, karşılıklı öğretim yoluyla motivasyon, katılım, eleştirel düşünme ve etkileşimin iyileştiğini vurgulayan önceki çalışmalarla uyumludur. Ders öncesi materyallerin sınıf içi işbirliğine dayalı öğrenmeyle entegre edilmesi, öğrencilerin motivasyonunu artırır, ön bilgilerini geliştirir ve eleştirel düşünmeyi keskinleştirir. Ancak, öğrencilerin ilerlemelerinin çeşitliliği, bağlamsal ve bireysel faktörler hakkında daha fazla araştırma yapılması gerektiğini göstermektedir. Bu çalışma, tersine öğrenme ile karşılıklı öğretimi birleştirmenin pratikliğini desteklemekle birlikte, küçük örneklem ve sınırlı bağlam, öğretim yaklaşımlarını iyileştirmek ve uyarlama için daha geniş kapsamlı çalışmalar yapılmasını gerektirmektedir.

**Anahtar Kelimeler:** Okuduğunu anlama, tersine sınıf, ders planı, karşılıklı öğretim, ön bilgi, eleştirel düşünme, motivasyon.

## Research Article

### History

Received: 02.04.2024

Accepted: 05.06.2025

Date Published: 30.06.2025

### Plagiarism Checks

This article has been reviewed by at least two referees and scanned via a plagiarism software.

### Peer-Review

Single anonymized-One internal (Editorial Board). Double anonymized-Two external.

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This study does not require ethical committee approval, and the data used were obtained from literature reviews/published sources. It is hereby declared that scientific and ethical principles were adhered to during the preparation of this study and that all studies used are cited in the references. Amina Abdelhadi

### Use of Artificial Intelligence

No artificial intelligence-based tools or applications were used in the preparation of this study. All content of the study was produced by the author(s) in accordance with scientific research methods and academic ethical principles. Amina Abdelhadi

### Complaints

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### Conflicts of Interest

The author(s) has no conflict of interest to declare.

### Grant Support

The author(s) acknowledge that they received no external funding in support of this research.

### Published

Published by Mehmet ŞAHİN Since 2016-Akdeniz University, Faculty of Theology, Antalya, 07058 Türkiye

### Cite as

Abdelhadi, A. (2025). The impact of flipped instruction and reciprocal teaching on reading comprehension skills. *Turkish Academic Research Review*, 10/2, 349-361, <https://doi.org/10.30622/tarr.1463321>

## Abstract

The effectiveness of flipped methodology largely depends on educators' skill in designing and implementing lesson plans that address students' academic challenges. While reciprocal teaching has shown promise in enhancing reading comprehension, its integration into flipped lesson plans remains underexplored. This study addresses this gap by examining how reciprocal teaching can be embedded within a flipped classroom framework to improve reading comprehension among 42 randomly selected high school students. Using a quasi-experimental design, the study employed a paired samples t-test to compare students' pre- and post-lesson feedback scores. Feedback was collected via anonymous forms assessing prior knowledge, motivation, and critical thinking on a five-point Likert scale. Before treatment, students' access to digital tools and the Internet, mainly through smartphones, was confirmed. The intervention consisted of three stages: baseline feedback after a traditional lesson, treatment via flipped instruction incorporating reciprocal teaching strategies, and post-treatment feedback. Results revealed a statistically significant improvement, leading to rejection of the null hypothesis. The increase in post-treatment scores highlights the effectiveness of reciprocal teaching in flipped lessons for overcoming reading comprehension challenges. These findings align with previous studies emphasizing improved motivation, engagement, critical thinking, and interaction through reciprocal teaching. Integrating pre-class materials with in-class collaborative learning fosters student motivation, enhances prior knowledge, and sharpens critical thinking. However, varied student progress suggests the need for further research into contextual and individual factors. While this study supports the practicality of combining flipped learning with reciprocal teaching, its small sample and limited context call for broader studies to refine and tailor instructional approaches.

**Keywords:** Reading comprehension, flipped classroom, lesson plan, reciprocal teaching, prior knowledge, critical thinking, motivation.

## Introduction

Examining teachers' thinking and lesson planning process has been a limited but emerging area of study (Hatch & Clark, 2021). An expression such as 'by the end of this lesson, learners will be able to....' is perhaps the starting point for systematic records of teachers' thoughts about what will be covered during their lessons. Several reasons underscore the importance of lesson planning. As Farrell (2002) posited, a lesson plan allows teachers to meticulously address learning objectives, content, materials, timing, sequencing, potential challenges, and activities before the commencement of instruction. Lesson planning, deemed crucial for effective teaching, enables objectives clear and precise articulation, activity alignment with learning outcomes (Tricarico & Yendol-Hoppey, 2012), preparation of materials (Mumba et al., 2007), anticipation, and resolution of potential problems (Jamali Nasari & Heidari, 2014), and provides a record of instructional decisions for consistency (Kyung Ko, 2012; Li & Zou, 2017; Chizhik & Chizhik, 2018).

While the ultimate objectives at the end of each lesson may remain constant, the approach to achieving them differs among teachers. The complexity of lesson planning, as influenced by various factors is evident. The chaos theory framework acknowledges classrooms as dynamic environments, where lesson plans may adapt based on student responses, necessitating disciplined improvisation during instruction (Boyd, 2012; Larsen-Freeman, 1997; Sawyer, 2004). Initially centered on recognizing the dynamic nature of classrooms, Hatch & Clark (2021) accentuate the 'how' of the instruction and not necessarily the 'what' in the lesson. Against this backdrop, the current study seeks to respond to Hatch & Clark's emphasis by investigating lesson planning using an instructional flipped methodology that incorporates the reciprocal teaching strategy to enhance reading comprehension skills. To address this objective, the study poses the following question:

1. Can the incorporation of a reciprocal teaching strategy within flipped lesson plans enhance reading comprehension skills among Algerian high school learners?

Aligned with this research question, it is hypothesized that flipped lesson plans integrating reciprocal teaching will lead to improvements in students' reading comprehension skills.

### 1. A Review of Flipped Classroom Impact on Language Skills Enhancement

Flipped learning, also known as flipped classroom (FC), has recently become a prevalent educational mode reversing traditional lecture and homework components in language education, profoundly revolutionizing the teaching process, and impacting academic performance (Zainuddin et al., 2019; Tsai et al., 2020; Chen et al., 2023; Lai Ng, 2023; Yan et al., 2024). The impact of the flipped classroom on receptive and productive language skills enhancement has been the subject of several recent studies. Khoiriyah (2021) addressed a research gap focusing on listening skills within the flipped classroom context, revealing that flipped instruction significantly enhances EFL students' listening comprehension skills and thereby provides valuable insights for EFL teachers seeking to adopt instructional strategies that effectively augment listening comprehension proficiency. Additionally, the importance of applying the flipped classroom approach to enhance learners' reading comprehension is acknowledged across various educational levels and contexts (Hashemifardnia et al., 2018; Umar, 2022).

Regarding language productive skills, Fathi et al. (2020) examined the impact of the flipped classroom on writing complexity, accuracy, and fluency for EFL students. Their findings indicate significant improvements in global writing performance with flipped instruction, suggesting potential benefits for EFL writing pedagogy. Similarly, in their investigation of the use of social media-supported flipped classrooms on learners' writing

performance and anxiety, filling a gap in research within the Chinese EFL context and employing a quasi-experimental design with two intact classes, Zhao and Yang (2022) found significant improvements in writing performance and reduction in writing. The influence of FC on the quality of language learning has been also explored in a study conducted in Bhutan where evidence is limited. Through questionnaires and semi-structured interviews with forty students, the results shared by Singay (2020) reveal positive attitudes towards the flipped classroom approach in learning grammar. Consistently, Recent research (Abdullah et al., 2019; Santhanasamy & Md, 2022) demonstrates the effectiveness of the flipped classroom model in enhancing English speaking skills among undergraduate students, evidenced by significant improvement in oral proficiency test scores.

Moreover, within this realm, Samadi et al. (2024) contend that FC implementation significantly influences learners' utilization of cognitive and meta-cognitive self-regulated learning strategies, thereby contributing to better learning outcomes, and improved higher-order thinking skills. Overall, these studies collectively show the positive impact of the flipped classroom on various language skills, including listening, writing, speaking, and reading.

## 2. Reciprocal Teaching Strategies

Reciprocal teaching (RT) is a structured approach widely used to enhance reading comprehension skills among students (Wu & Chen, 2018). Reciprocal teaching was proposed by Palincsar and Brown in 1984, drawing upon Vygotsky's sociocultural theory of learning. Rather than depending solely on the expertise of the teacher, RT emphasizes collaborative dialogue, metacognitive strategies, and shared responsibility between teachers and students, facilitating discussions and leading to significant improvement in reading comprehension through four main reading strategies: prediction, clarification, questioning, and summarization (Palincsar & Brown, 1984; Fung, Wilkinson, & Moore, 2003).

Palincsar (1986) states that predicting happens when students speculate about what topics will be discussed in the text that follows, emphasizing that prediction involves activating background knowledge and revising predictions if needed (Teele, 2004). Clarification, as described by Palincsar and Brown (1984), involves addressing text misunderstandings, including new vocabulary and unclear references, aiming to ensure comprehension as its focus. Questioning, deemed as the most effective strategy (Owens, 1976), enables students to improve their comprehension by asking questions about the text (Yang, 2010). Finally, summarization, according to Irwin (1991: 04), refers to 'deleting unimportant information, and identifying or constructing general or main idea statements that summarize many details.'

Several recent studies (Oo et al., 2021; Albatoool & Moneus, 2023; O'Hare et al., 2023; Mohamed, 2023) have highlighted the positive impact of reciprocal teaching on reading comprehension across diverse educational levels and subjects. Mafarja et al. (2023) conducted a systematic review investigating the impact of reciprocal teaching/learning on academic achievement across all student levels, revealing its potential in improving comprehension, cooperative learning, motivation, academic achievement, metacognition, and critical thinking skills. While effective in fostering an engaging learning environment across various settings, further research and professional development are crucial to fully harness the potential impact of reciprocal teaching, especially in Flipped classrooms, the focal point of the present study.

## 1. Methodology

To validate the set hypothesis and accomplish the objectives of the present study, we have chosen a quasi-experimental approach employing a paired samples t-test. The quasi-experimental design, specifically utilizing a

t-test for paired groups, is a form of inferential statistics utilized to ascertain whether there exists a noteworthy difference between the mean scores of students' post-lesson feedback forms regarding reading comprehension improvement through the reciprocal teaching approach in planning flipped lessons. The anonymous post-lesson feedback forms, used to evaluate students' reading comprehension abilities before and after the intervention, consist of three elements measured on a five-point Likert scale:

Elements	1	2	3	4	5
<b>1. Prior knowledge</b>					
a. Demonstrating familiarity with the vocabulary of the text.					
b. Making connections between the text and existing knowledge.					
c. Making inferences quickly and accurately.					
d. Successfully answering comprehension questions.					
e. Easily remembering and memorizing words.					
<b>2. Motivation</b>					
a. Finding the text interesting and engaging.					
b. Being eager to skim through the text.					
c. Being motivated to discover unfamiliar words.					
d. Feeling anxious about lacking prior knowledge about the text's topic and ideas.					
e. Gaining confidence in understanding the text.					
<b>3. Critical Thinking Skills</b>					
a. Analyzing and evaluating the text's content.					
b. Drawing logical conclusions based on evidence from the text.					
c. Formulating insightful questions about the text.					
d. Synthesizing information from various parts of the text.					
e. Applying critical thinking strategies to solve problems encountered in the text.					
<div> 1. <input type="radio"/> Disagree; 2. <input type="radio"/> Strongly disagree; 3. <input type="radio"/> Neutral; 4. <input type="radio"/> Agree 5. <input type="radio"/> Strongly agree </div>					

**Table1.** Post-lesson feedback form: Exploring Elements of Flipped Classroom Integration and Reciprocal Teaching

The target sample consisted of 42 second-year high school students, selected randomly. Before implementing the treatment, namely the adoption of the reciprocal teaching approach in the design of flipped reading comprehension lessons, the chosen students were queried about their possession of the necessary skills, digital tools, and internet access to receive learning materials via Google Classroom. It is noteworthy that nearly all students had smartphones, upon which the experiment heavily relied. The phases and procedures undertaken for the quasi-experiment are as follows:

1. **The initial stage**, aimed at measuring the dependent variable, involved asking students to complete a brief feedback form after a reading comprehension lesson designed and executed using the traditional approach without the incorporation of reciprocal learning strategies.

2. **The subsequent stage** entailed exposing the same group of individuals to the treatment, which involved utilizing a flipped classroom lesson plan using reciprocal learning strategies for teaching reading comprehension.

### 3. Type of the target text

Level	Second Year
Stream	Literary stream

<b>Unit Six</b>	No man is an Island (Disasters and Solidarity)
<b>Sequence 2</b>	Reading and Writing

### 1.1. The objective of this lesson

By the end of this lesson, adapted to the needs of flipped methodology and incorporating reciprocal teaching, learners will be able to:

Reading Stages	The treatment Instructions	Objectives
<b>Pre-Class: Content Introduction</b>		
<b>Pre-Reading</b>	1. Students independently read the assigned text at home and make predictions.  <b>- Material:</b> The assigned text.	a. Make Predictions about the content of the text
<b>In-Class (Classroom Setting): Deeper Engagement</b>		
<b>While- reading</b>	1. Engage students in a warm-up activity where they share their predictions about the text.  2. Assign each group with four members, each assigned with a specific reciprocal learning role: predictor, questioner, clarifier, and summarizer.  3. As students read the text, they should actively engage in their assigned roles: - Discuss predictions. - Generate questions - Clarify misunderstandings  4. The teacher facilitates a whole-class discussion where each group shares their thoughts based on their assigned roles.	b. Share Predictions about the content of the text based on prior knowledge.  c. Engage critically with the text.  d. Identify confusing parts of the text and clarify them through discussion and analysis.
<b>Post- Class (Classroom Setting)</b>		
<b>Post-Reading</b>	<b>Feedback &amp; Reflection</b>  1. The teacher guides students in synthesizing the main ideas of the text and connecting them to real-world contexts.  2. Each student conducts a short review of key ideas, synthesizing and summarizing the key points discussed with the group.  3. The teacher provides constructive feedback on students' comprehension of the text.	synthesize the main ideas of the text into concise summaries.

2. **The last stage** occurs after the treatment. It involves administering the same post-lesson feedback form to fundamentally assess the effectiveness of the manipulated independent variable (the flipped lesson plan

employing reciprocal teaching) on the dependent variable (students' English reading comprehension improvement).

#### 4. Results

This section includes an analysis of the aforementioned components of the participants' post-lesson feedback forms both before and after undergoing the experimental treatment. Subsequently, the results of each test are compared for null hypothesis testing.

##### 4.1. Pre- Treatment Results

Firstly, the results of the feedback form, completed after a reading comprehension lesson designed and executed using the traditional approach without integrating reciprocal teaching into the flipped lesson plan, are presented.

	Prior Knowledge	Motivation	Critical thinking Skills
Paired sample	Experimental group		
Mean	2.21	1.97	1.80
SD	1.0008	,97	1.01
Minimum	1	1	1
Maximum	5	4	4

##### SPSS Output 1. Pre-treatment Results

Based on the SPSS output provided, it appears that the target learners generally rated their prior knowledge relatively higher (2.21) compared to their motivation (1.97) and critical thinking skills (1.80). There seems to be more variability in ratings for prior knowledge compared to motivation and critical thinking skills, as indicated by the standard deviations. Most values for motivation and critical thinking skills fall between 1 and 4, providing a snapshot of the experimental group's performance in the reading comprehension lesson before the treatment is implemented.

##### 4.2. Post-Treatment Results

The post-test results are presented to determine whether the performance of the selected sample has improved as a result of the experimental treatment.

	Prior Knowledge	Motivation	Critical thinking Skills
Paired sample	Experimental group		
Mean	3.11	2.97	2.54
SD	1.15	1.13	,94
Minimum	1	1	1
Maximum	5	5	5

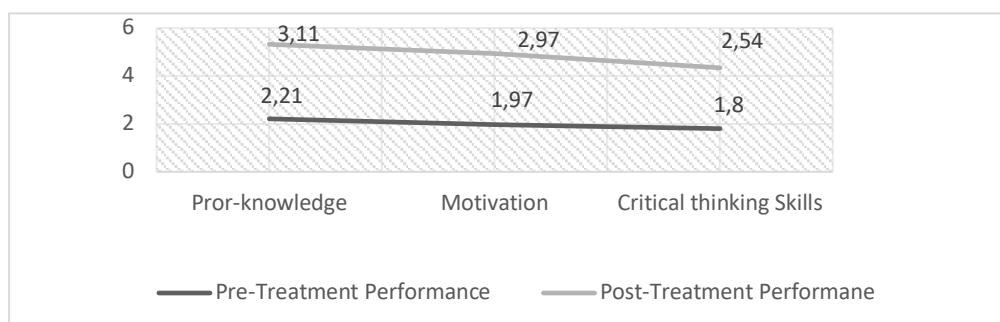
##### SPSS Output 2. Post-treatment Results

The SPSS output 2 indicates that, after the experimental treatment, there is an observable increase in the mean ratings for all three factors (prior knowledge, motivation, and critical thinking skills) compared to their pre-treatment levels. This suggests that the treatment had a positive effect on these aspects. The standard deviations imply that there is variability in the degree of improvement among learners within the experimental group. This



variance could be attributed to various factors, including the specific reciprocal learning roles assigned to each member of the experimental group during the treatment. Worth noting is that the maximum scores for each factor reach the highest possible value.

#### 4.3. Paired Sample T-Test: Comparing Means and Hypothesis Testing



Figure

##### 1. Comparing Means

Based on the comparison between pre-treatment and post-treatment performance, it can be concluded that the treatment has a significant effect on enhancing the sample's perceived levels of prior knowledge, motivation, and critical thinking skills for reading comprehension. The increases in mean ratings across all three factors indicate the beneficial impact of the treatment.

##### 4.3.2. Hypothesis Testing

Performance Difference	Mean	Std.Deviation	Sig. (P-value)
Pre-/ Post treatment	-.88	.131	.007

##### SPSS Output 3. Paired Samples Test

The paired samples test conducted on the pre-and post-treatment assessments resulted in a mean difference of -0.88, with a standard deviation of 0.131 and a statistically significant p-value of 0.007. Given the significance level ( $\alpha$ ) typically set at 0.05, the obtained p-value of 0.007 is less than  $\alpha$ . According to the criteria outlined for hypothesis testing in the present study, when the p-value is less than or equal to  $\alpha$ , there is enough evidence to reject the null hypothesis ( $p \leq \alpha$ ). Therefore, since the p-value is less than  $\alpha$  ( $0.007 < 0.05$ ), we can conclude that there is sufficient evidence to accept the alternative hypothesis ( $H_1$ ), which suggests that there is indeed a difference in performance between the pre-and post-treatment assessments. This indicates that the implementation of flipped lesson plans with the reciprocal teaching strategy would result in improvements in the reading comprehension of Algerian high school learners.

##### 5. Synthesis of the Main Finding

The current study aims to investigate the effectiveness of flipped lesson planning utilizing an instructional flipped methodology incorporating the reciprocal teaching strategy to enhance reading comprehension skills. Employing a quasi-experimental research design, the researcher conducted a paired samples T-test. The results, based on the presented data, indicate a significant improvement in reading comprehension skills among the target sample following the intervention. This improvement is evident across three key aspects: prior knowledge, motivation, and critical thinking. Consequently, the alternative hypothesis is confirmed. Statistically, the paired samples t-test revealed a significant difference between the mean scores of the post-lesson feedback forms completed by the experimental group before treatment ( $M = 1.99$ ) and after treatment ( $M = 2.87$ ). With a p-value



of .007, which is less than the significance level ( $\alpha = 0.05$ ), the decision rule confirms the significance of the findings.

The observed increase in post-treatment mean scores among the students can be attributed to the experimental treatment, affirming the effectiveness of the manipulated independent variable (the use of reciprocal teaching strategies for flipped lesson plans) on the dependent variable (students' reading comprehension skills). Synthesizing related studies reveal consistent findings supporting the effectiveness of reciprocal teaching strategies, particularly when combined with collaborative learning. Basoeki et al. (2020) and Rukmanta and Yanto (2022) both highlighted increased interaction, communication, critical thinking, motivation, leadership, and cooperation among students when reciprocal teaching was integrated with collaborative learning and flipped classroom approaches. Consistently, the study conducted by Novridewi et al. in 2023 demonstrated enhanced student engagement, motivation, and improved learning outcomes through the implementation of reciprocal teaching activities in reading. Aligned with these findings, Carey et al. (2023) and Mawlood and Abbas (2022) underscored positive attitudes among teachers and improved skill analysis and feedback skills among students, respectively, when reciprocal teaching strategies were incorporated into instruction.

In conclusion, the findings of the present research demonstrate the effectiveness of reciprocal teaching strategies in enhancing students' reading comprehension skills, both when implemented alone (in pre-class predicting activity) and then in tandem with collaborative learning during class (questioning, clarifying, and summarizing activities in the classroom setting). Integrating reciprocal teaching strategies with flipped lesson planning presents a potent method to improve students' reading comprehension abilities. By introducing pre-class materials and fostering active engagement, critical thinking, and collaboration during class, these techniques effectively empower students to become more proficient in prior knowledge, motivated readers, and critical thinkers. However, the variability in improvement among learners highlights the significance of considering individual differences and instructional strategies in educational interventions. This emphasizes the need for further research to explore the factors influencing intervention effectiveness and to develop tailored approaches that accommodate the diverse needs of learners.

### Conclusion

Designing a lesson is a multifaceted task for educators, involving a systematic process of determining what and how students should learn. Collaboration among teachers is essential in this endeavor, especially as education continues to evolve with the emergence of innovative models like the flipped classroom, which entails incorporating elements that engage students actively and promote critical thinking to enhance their overall learning experiences.

Enhancing reading comprehension through reciprocal teaching strategies, particularly when integrated with flipped lesson planning, offers a dynamic approach to improving students' understanding of texts. Reciprocal teaching, involving predicting, questioning, clarifying, and summarizing, fosters active engagement and critical thinking among students, while flipped lesson planning allows for personalized learning experiences and collaborative activities. Supported by research findings demonstrating increased engagement, motivation, and learning outcomes, the combination of reciprocal teaching and flipped classrooms offers educators a powerful tool to enhance reading comprehension skills. Practical implementation tips include utilizing pre-class materials to introduce content, and providing explicit instruction while also encouraging active participation, and promoting

deeper engagement during class time. By incorporating these strategies into instruction, educators can create dynamic learning environments that empower students to become proficient readers.

Nevertheless, it is crucial to acknowledge the limitations of this study, including its small sample size and restricted time frame. Contextual differences may impact the generalizability of the findings. Additionally, the study does not address all aspects of flipped lesson design, highlighting the necessity of additional research in this area.

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