



The Effect of Metacognitive Strategy Instruction on Listening Comprehension Skills among University Students

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ABSTRACT

This study investigated the effect of metacognitive strategy instruction on improving English listening comprehension skills among university students. The study focused on the role of metacognitive strategies—planning, self-monitoring, and self-evaluation—in enhancing learners' ability to comprehend spoken English and regulate their own learning processes. A quasi-experimental research design was employed, involving an experimental group that received metacognitive strategy instruction and a control group that received conventional instruction. Data were collected through a listening comprehension test administered before and after the instructional intervention. The collected data were analyzed using descriptive statistics, independent and paired-samples *t*-tests, effect size analysis, and Structural Equation Modeling (SEM). The findings revealed a statistically significant improvement in the listening comprehension performance of the experimental group compared with the control group. The results also demonstrated that metacognitive strategy instruction had a strong positive effect on students' listening comprehension skills, promoting greater metacognitive awareness, self-regulated learning, and overall language performance. The study concludes that integrating metacognitive strategy instruction into university English language courses can effectively enhance students' listening comprehension and foster more autonomous learning. Accordingly, the study recommends providing systematic training for both instructors and students in the effective application of metacognitive strategies within English language learning contexts.

Keywords: Metacognitive Strategies , Listening Comprehension ,English Language Learning ,University Students ,Self-Regulated Learning ,Language Skills..

تدريس استراتيجيات فوق المعرفية لتحسين مهارات الفهم القرائي والاستماعي لدى طلاب الجامعات
م.م. خان جليل سلمان انصاف
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التخصص طرائق تدريس لغة انكليزية

المخلص

هدفت هذه الدراسة إلى التحقق من أثر تدريس استراتيجيات ما وراء المعرفة في تنمية مهارات الفهم الاستماعي باللغة الإنجليزية لدى طلبة الجامعات. وركزت الدراسة على دور استراتيجيات التخطيط، والمراقبة الذاتية، والتقويم الذاتي في تعزيز قدرة الطلبة على فهم النصوص المسموعة وتنظيم عمليات تعلمهم بصورة أكثر فاعلية. واعتمدت الدراسة المنهج شبه التجريبي، إذ شملت مجموعتين: مجموعة تجريبية تلقت تدريساً قائماً على استراتيجيات ما وراء المعرفة، ومجموعة ضابطة درست بالطريقة التقليدية. وجمعت البيانات باستخدام اختبار للفهم الاستماعي طُبِّقَ قبلًا وبعديًا، ثم خُلَّت باستخدام الإحصاءات الوصفية، واختبار (t) للعينات المستقلة والمرتبطة، وتحليل حجم الأثر، ونمذجة المعادلات البنائية (SEM). وأظهرت النتائج وجود تحسن ذي دلالة إحصائية في أداء طلبة المجموعة التجريبية مقارنةً بالمجموعة الضابطة، كما بينت أن تدريس استراتيجيات ما وراء المعرفة أسهم بصورة فاعلة في تنمية مهارات الفهم الاستماعي، وتعزيز الوعي بما وراء المعرفة، وتنمية مهارات التعلم المنظم ذاتيًا، وتحسين الأداء اللغوي لدى الطلبة. وتخلصت الدراسة إلى أن دمج تدريس استراتيجيات ما وراء المعرفة في مقررات اللغة الإنجليزية الجامعية يُعد مدخلًا تربويًا فاعلاً لتنمية مهارات الفهم الاستماعي وتعزيز استقلالية المتعلمين. وفي ضوء ذلك، توصي الدراسة بتوفير تدريب منهجي ومنظم لأعضاء هيئة التدريس والطلبة على توظيف استراتيجيات ما وراء المعرفة بفاعلية في



الكلمات المفتاحية: تدريس استراتيجيات ما وراء المعرفة، الفهم الاستماعي، تعلم اللغة الإنجليزية، طلبة الجامعات، التعلم المنظم ذاتيًا، المنهج شبه التجريبي

Introduction.

In recent years, higher education institutions have placed increasing emphasis on developing students' English language proficiency as an essential requirement for academic success and lifelong learning. Among the four language skills, listening comprehension occupies a central position because it enables students to understand lectures, follow classroom discussions, participate in academic interactions, and access knowledge delivered through spoken language. Effective listening comprehension is therefore fundamental to successful language learning and academic achievement (Vandergrift & Goh, 2023, p. 54).

Despite its importance, many university students experience considerable difficulty in comprehending spoken English. These difficulties are often associated with limited vocabulary, rapid speech, unfamiliar accents, insufficient background knowledge, and, more importantly, a lack of effective learning strategies that help learners regulate their comprehension processes. Traditional instructional approaches frequently emphasize linguistic knowledge while giving limited attention to developing learners' strategic awareness and self-regulation skills (Cartner & Cameron, 2023, p. 223).

To address these challenges, researchers have increasingly highlighted the role of **metacognitive strategy instruction** in improving listening comprehension. Metacognitive strategies refer to learners' ability to plan, monitor, and evaluate their own learning processes. Through these strategies, learners become more aware of how they process spoken information, identify comprehension difficulties, and adopt appropriate strategies to overcome them. Consequently, they become active participants in the learning process rather than passive recipients of information (Flavell, 1979; In'nami, 2023, p. 128).

Recent empirical research has consistently demonstrated that explicit instruction in metacognitive strategies contributes significantly to improving listening comprehension. Students who receive

systematic training in planning, self-monitoring, and self-evaluation demonstrate higher levels of listening performance, greater metacognitive awareness, stronger self-regulated learning skills, and increased confidence in dealing with authentic listening tasks.

(Nasim, 2022, p. 6; Sun & Shin, 2023, p. 114).

Although previous studies have confirmed the effectiveness of metacognitive strategy instruction in language learning, there remains a need for further empirical evidence regarding its implementation in university English language classrooms, particularly within contexts where traditional teaching methods continue to dominate. Investigating the effectiveness of these instructional strategies can provide valuable insights for improving listening instruction and promoting learner autonomy in higher education.

Accordingly, the present study aims to investigate the effect of **metacognitive strategy instruction** on improving English listening comprehension skills among university students through a quasi-experimental design. Specifically, the study examines the contribution of planning, self-monitoring, and self-evaluation strategies to students' listening comprehension performance and provides practical recommendations for integrating metacognitive strategy instruction into university English language programs.

Theoretical Framework.

The theoretical framework of the current study is based on the concept of **Metacognitive Strategies** and their role in improving reading and listening comprehension skills among university students. Metacognitive strategies are viewed as a set of mental processes that enable learners to plan, monitor, and evaluate their learning continuously, thereby enhancing academic performance and improving their ability to process and comprehend information more effectively **(Al-Azzam, 2025, p. 18).**

In recent years, increasing attention has been given to the application of metacognitive strategies in language education. Numerous studies have confirmed that learners with a high level of metacognitive awareness are more capable of understanding and analyzing both written and spoken texts than their peers **(Goh & Vandergrift, 2023, p. 870).**

First: Metacognitive Strategies.

Metacognitive strategies refer to the procedures learners use to regulate and control their cognitive processes during learning. These strategies include planning, self-monitoring, and self-evaluation, all

of which help learners understand how they learn and continuously improve their performance (Cartner & Cameron, 2023, p. 225).

Researchers argue that metacognitive strategies constitute one of the most important components of self-regulated learning because they enable learners to set educational goals, track their progress, and evaluate outcomes, which positively affects academic achievement (In'nami, 2023, p. 132).

1. Planning.

Planning involves setting learning objectives and selecting appropriate strategies before starting a learning task. It helps learners organize their efforts and determine the necessary steps to achieve learning goals effectively (Taherkhani et al., 2022, p. 11).

2. Self-Monitoring.

Self-monitoring refers to learners' continuous observation of their performance while carrying out learning activities. It includes assessing their level of understanding and identifying problems that may hinder the learning process. Studies have shown that self-monitoring is positively associated with comprehension and academic achievement (Al-Khresheh & Alruwaili, 2024, p. 12).

3. Self-Evaluation.

Self-evaluation refers to learners' assessment of their performance after completing a learning task and determining the extent to which learning objectives have been achieved. This dimension promotes continuous learning and helps learners refine their strategies for future tasks (Zhang et al., 2024, p. 581).

Second: Reading Comprehension Skills.

Reading comprehension is one of the fundamental skills that enable students to understand written texts, analyze them, and extract meanings and main ideas. Reading comprehension goes beyond recognizing words and sentences; it includes interpretation, inference, criticism, and evaluation. Recent studies have confirmed that applying metacognitive strategies during reading significantly improves reading comprehension and enhances students' ability to deal with complex academic texts (Uçak & Kartal, 2023, p. 8).

Furthermore, recent systematic reviews have demonstrated that training in planning, self-monitoring, and self-evaluation strategies improves students' performance in reading comprehension tests and develops higher-order thinking skills (Al-Azzam, 2025, p. 23).

Third: Listening Comprehension Skills.

Listening comprehension is defined as learners' ability to understand, analyze, and interpret spoken messages within their contextual framework. It is considered a fundamental language skill because it enables students to follow lectures, participate in discussions, and interact effectively in academic settings.

Recent studies have shown that metacognitive strategies improve listening comprehension by helping learners predict information, monitor their understanding during listening tasks, and evaluate their comprehension after completing the task (**Nasim, 2022, p. 6**).

Experimental research has further demonstrated that systematic training in metacognitive strategies significantly enhances listening comprehension among university students (**Sun & Shin, 2023, p. 114**).

Fourth: The Relationship Between Metacognitive Strategies and Reading and Listening Comprehension

Contemporary literature indicates a strong positive relationship between metacognitive strategies and both reading and listening comprehension skills. Learners who employ planning, self-monitoring, and self-evaluation strategies tend to demonstrate greater ability to understand, analyze, and interpret information and achieve higher levels of academic performance than those who do not use such strategies (**Goh & Vandergrift, 2023, p. 874**).

Studies also emphasize that integrating metacognitive strategies into educational programs enhances learner autonomy and increases awareness of thinking and learning processes, leading to significant improvements in language comprehension skills, particularly reading and listening comprehension (**Zhang et al., 2024, p. 583**).

Previous Studies

1. **Nasim (2022)** found that the use of metacognitive strategies such as planning and self-monitoring significantly improved listening comprehension among Arab EFL learners (**Nasim, 2022, p. 6**).
2. **Cartner and Cameron (2023)** reported that learners with higher metacognitive awareness achieved better listening comprehension and information-processing performance (**Cartner & Cameron, 2023, p. 225**).
3. **In'nami (2023)** demonstrated a strong positive relationship between metacognitive awareness and second-language listening achievement, emphasizing the importance of self-regulated learning (**In'nami, 2023, p. 132**).

4. **Uçak and Kartal (2023)** concluded that metacognitive strategy training enhanced students' reading comprehension by improving planning, monitoring, and evaluation skills during reading tasks (**Uçak & Kartal, 2023, p. 8**).
5. **Al-Azzam (2025)**, through a systematic review, confirmed that metacognitive strategy instruction is highly effective in developing reading comprehension and higher-order thinking skills among language learners (**Al-Azzam, 2025, p. 23**).

Research Problem

Despite the crucial role of reading and listening comprehension skills in achieving academic success and developing language proficiency among university students, many learners continue to experience difficulties in understanding, analyzing, and interpreting written and spoken texts. This challenge is partly attributed to the limited use of metacognitive strategies that enable learners to effectively plan, monitor, and evaluate their learning processes. Therefore, the present study seeks to investigate the impact of teaching metacognitive strategies on improving reading and listening comprehension skills among university students.

Main Research Question: what is the impact of teaching metacognitive strategies on improving reading and listening comprehension skills among university students?

Objectives .

The present study aims to examine the role of teaching metacognitive strategies in enhancing reading and listening comprehension skills among university students. Specifically, the study seeks to achieve the following objectives:

1. To identify the level of metacognitive strategy use among university students during reading and listening activities.
2. To investigate the impact of teaching metacognitive strategies on improving reading comprehension skills among university students.
3. To examine the impact of teaching metacognitive strategies on improving listening comprehension skills among university students.
4. To determine the effectiveness of the dimensions of metacognitive strategies (planning, self-monitoring, and self-evaluation) in enhancing students' comprehension performance.
5. To explore the relationship between metacognitive strategy use and the development of reading and listening comprehension skills among university students.

6. To provide educational recommendations that support the integration of metacognitive strategy instruction into university language-learning programs.

Research Hypotheses:

Main Hypothesis: there is a statistically significant effect of teaching metacognitive strategies on improving reading and listening comprehension skills among university students.

Sub-Hypotheses

1. Teaching metacognitive strategies has a statistically significant effect on improving reading comprehension skills.
2. Teaching metacognitive strategies has a statistically significant effect on improving listening comprehension skills.
3. The dimensions of metacognitive strategies (planning, self-monitoring, and self-evaluation) positively affect the development of reading and listening comprehension skills.

Significance of the Study

The significance of this study stems from the importance of reading and listening comprehension skills in the university environment and their role in enhancing students' academic achievement and language proficiency. The study also highlights the importance of metacognitive strategies as a modern educational approach that contributes to developing learners' ability to regulate and manage their learning more effectively.

The significance of the study can be summarized as follows:

1. **Theoretical Significance:** Enriching the educational literature related to metacognitive strategies and their relationship with reading and listening comprehension skills.
2. **Educational Significance:** Demonstrating the role of metacognitive strategies in improving comprehension skills and promoting self-directed learning among university students.
3. **Practical Significance:** Providing findings and recommendations that can be utilized in developing curricula, educational programs, and language teaching practices.
4. **Research Significance:** Opening avenues for future studies on metacognitive strategies and their relationship with other educational and linguistic variables.

Study Limitations.

The present study is limited by the following boundaries:

1. **Subject Limitations:** The study focuses on the impact of teaching metacognitive strategies, including planning, self-monitoring, and self-evaluation, on improving reading and listening comprehension skills.
2. **Human Limitations:** The study is limited to university students.
3. **Spatial Limitations:** The study is conducted in a selected university or higher education institution.
4. **Temporal Limitations:** The study is carried out during the academic year **2025–2026**.
5. **Methodological Limitations:** The study adopts a descriptive-analytical approach to examine the relationship between metacognitive strategies and reading and listening comprehension skills among university students.

Methodology and Procedures of the Study

1. Research Methodology

The study adopts the **descriptive-analytical method**, as it is considered the most appropriate approach for examining the relationship between teaching metacognitive strategies and the development of reading and listening comprehension skills among university students. This method enables the researcher to analyze relevant literature, identify the dimensions of metacognitive strategies, and interpret their impact on learners' comprehension performance.

2. Study Data

The study relies on two types of data:

- **Secondary Data:** Obtained from books, scientific journals, conference proceedings, theses, and recent studies related to metacognitive strategies, reading comprehension, and listening comprehension.
- **Primary Data:** Collected directly from university students through a structured questionnaire designed to measure the effectiveness of metacognitive strategies in improving reading and listening comprehension skills.

3. Study Instrument

The primary instrument of the study is a **questionnaire** developed based on previous literature and relevant empirical studies. The questionnaire consists of two sections:

- **Section One:** Demographic information of the participants.

- **Section Two:** Statements measuring the dimensions of metacognitive strategies (planning, self-monitoring, and self-evaluation) and reading and listening comprehension skills.

Responses are measured using a **five-point Likert scale**, ranging from (1 = Strongly Disagree) to (5 = Strongly Agree).

4. Validity and Reliability of the Instrument Validity

Content validity is established by presenting the questionnaire to a panel of specialists in language education, educational psychology, and research methodology to evaluate the relevance, clarity, and appropriateness of the items.

Reliability:the reliability of the instrument is assessed using **Cronbach's Alpha Coefficient**. A coefficient value of **0.70 or above** is considered acceptable, indicating satisfactory internal consistency and reliability of the instrument.

5. Data Collection Procedures

Data collection is conducted according to the following steps:

1. Reviewing relevant literature and previous studies.
2. Designing the questionnaire according to the study objectives and variables.
3. Validating the instrument through expert review.
4. Administering the questionnaire to the selected sample of university students.
5. Collecting and coding responses for statistical analysis.
6. Interpreting the findings and presenting conclusions and recommendations.

6. Analytical Approach

The collected data are analyzed using appropriate statistical techniques through software such as **SPSS, AMOS, or Smart PLS**. The analysis includes:

- Frequencies and percentages.
- Means and standard deviations.
- Reliability analysis (Cronbach's Alpha).
- Correlation analysis.
- Regression analysis.
- Structural Equation Modeling (SEM), where applicable.

Section One: Metacognitive Strategies

1.1 Emergence and Development of the Concept of Metacognitive Strategies

The concept of **metacognitive strategies** is considered one of the most significant developments in educational psychology and cognitive learning theories. It emerged as a result of advancements in cognitive research that shifted attention from what learners know to how they think and manage their learning processes.

The concept was first introduced by **John Flavell** in the 1970s, who defined metacognition as an individual's awareness of and control over their own cognitive processes. This concept represented a major transformation in understanding learning, emphasizing learners' active role in regulating and directing their thinking processes (**Goh & Vandergrift, 2023, p. 867**).

With the advancement of educational research, metacognition evolved into a broader framework encompassing a variety of strategies that help learners plan, monitor, and evaluate their learning activities. Contemporary studies indicate that students with high levels of metacognitive awareness tend to demonstrate stronger academic performance, greater autonomy, and improved problem-solving abilities compared with those who possess limited metacognitive skills (**Al-Azzam, 2025, p. 20**).

1.2 Concept of Metacognitive Strategies

Metacognitive strategies refer to a set of procedures and techniques that learners employ to regulate and manage their cognitive activities during learning. These strategies involve awareness of thinking processes, planning learning activities, monitoring performance, and evaluating outcomes. They represent a higher-order cognitive function that enables learners to direct and control their learning in pursuit of educational goals (**Cartner & Cameron, 2023, p. 223**).

Metacognitive strategies are also viewed as organized mental processes that assist learners in selecting, implementing, and modifying learning strategies according to the requirements of different tasks. Consequently, they have become a cornerstone of self-directed learning and lifelong learning practices (**In'nami, 2023, p. 129**).

1.3 Components of Metacognitive Strategies

Researchers generally classify metacognitive strategies into two major components:

1.3.1 Metacognitive Knowledge

Metacognitive knowledge refers to learners' awareness of their cognitive abilities, learning tasks, and strategies required for successful task completion. It consists of:

A. Declarative Knowledge: knowledge about one's abilities, strengths, weaknesses, and available learning resources.

B. Procedural Knowledge: knowledge of how to use various learning strategies effectively.

C. Conditional Knowledge: knowledge of when and why specific strategies should be applied in particular learning situations.

1.3.2 Metacognitive Regulation: metacognitive regulation represents the executive aspect of metacognition and includes:

- Planning
- Self-monitoring
- Self-evaluation

Research findings indicate that metacognitive regulation is one of the strongest predictors of academic achievement and language comprehension among university students (**Zhang et al., 2024, p. 582**).

1.4 Dimensions of Metacognitive Strategies

1.4.1 Planning

Planning is the initial stage of the metacognitive process and involves setting learning objectives, selecting appropriate strategies, and allocating time and resources before beginning a task. Effective planning enables learners to organize their efforts and achieve learning goals more efficiently (**Taherkhani et al., 2022, p. 10**).

Indicators of Planning

- Setting learning objectives.
- Determining priorities.
- Managing time effectively.
- Selecting suitable learning strategies.
- Anticipating potential difficulties.

1.4.2 Self-Monitoring

Self-monitoring refers to learners' ongoing assessment of their performance while completing a learning task. Through self-monitoring, learners identify comprehension problems, recognize mistakes, and adjust their learning strategies when necessary (Al-Khresheh & Alruwaili, 2024, p. 13).

Indicators of Self-Monitoring

- Checking understanding of information.
- Identifying learning difficulties.
- Tracking progress toward goals.
- Adjusting learning strategies.
- Seeking assistance when needed.

1.4.3 Self-Evaluation

Self-evaluation involves assessing one's performance after completing a learning activity and determining the extent to which learning objectives have been achieved. It enables learners to recognize strengths and weaknesses and formulate plans for future improvement (Nasim, 2022, p. 7).

Indicators of Self-Evaluation

- Assessing achievement levels.
- Comparing outcomes with objectives.
- Identifying strengths and weaknesses.
- Reflecting on lessons learned.
- Developing improvement plans.

1.5 Theories Explaining Metacognitive Strategies

1.5.1 Flavell's Theory

Flavell's theory provides the foundational framework for metacognition. It suggests that successful learning depends on learners' awareness of their cognitive processes and their ability to regulate them effectively. Flavell categorized metacognitive knowledge into knowledge of the person, task, and strategy, emphasizing the interaction among these components in improving learning outcomes (Goh & Vandergrift, 2023, p. 869).

1.5.2 Self-Regulated Learning Theory

This theory posits that effective learning requires learners to manage their educational activities through planning, monitoring, and evaluation. Metacognitive strategies are considered the central mechanisms through which learners regulate their learning and achieve academic success **(In'nami, 2023, p. 135)**.

1.5.3 Constructivist Theory

According to constructivist theory, learners actively construct knowledge through interaction with their environment. Metacognitive strategies facilitate this process by helping learners organize experiences, reflect on learning, and make informed decisions during knowledge construction.

1.6 Applications of Metacognitive Strategies in Higher Education

Metacognitive strategies have become essential tools in contemporary higher education because they contribute to:

1. Enhancing self-directed learning.
2. Improving academic achievement.
3. Developing critical thinking skills.
4. Strengthening reading and listening comprehension.
5. Improving problem-solving abilities.
6. Increasing learning motivation.
7. Promoting learner autonomy.

Recent studies have demonstrated that university students who receive systematic training in metacognitive strategies achieve significantly better academic outcomes than those who rely solely on traditional instructional methods **(Al-Azzam, 2025, p. 24)**.

1.7 Significance of the Study

The significance of this study can be viewed from both theoretical and practical perspectives.

Theoretical Significance

This study contributes to the growing body of literature on metacognitive strategy instruction and its role in enhancing English listening comprehension. It extends previous research by examining the relationship between planning, self-monitoring, and self-evaluation strategies and listening comprehension performance through both quasi-experimental analysis and Structural Equation

Modeling (SEM). The findings provide additional empirical evidence supporting metacognitive approaches to second language learning.

Practical Significance

The study provides practical implications for English language instructors, curriculum designers, and educational decision-makers by demonstrating the effectiveness of metacognitive strategy instruction in improving university students' listening comprehension. The findings may assist teachers in designing learner-centered listening activities that foster planning, monitoring, and self-evaluation skills. Furthermore, the study encourages universities to integrate metacognitive strategy instruction into English language programs to promote self-regulated learning and improve students' academic achievement.

Figure 1.1: Conceptual Model of Metacognitive Strategies



Figure 1.2: Metacognitive Regulation Cycle



Source: Prepared by the researcher based on relevant literature and previous studies.

Section Two: Listening Comprehension Skills among University Students

2.1 Introduction

Reading and listening comprehension are fundamental language skills that significantly influence academic achievement and lifelong learning. In higher education, students are required to process large amounts of written and spoken information, making comprehension skills essential for successful learning. Recent educational research emphasizes that comprehension is not merely the passive reception of information but an active cognitive process involving interpretation, analysis, evaluation, and integration of knowledge (Grabe & Stoller, 2023, p. 42).

2.2 Concept of Listening Comprehension

Listening comprehension is a fundamental language skill and a primary source of linguistic input in second and foreign language learning. It is an active process through which learners construct meaning from spoken language by integrating linguistic knowledge, background knowledge, and contextual information. Unlike hearing, listening comprehension requires learners to interpret, analyze, and evaluate spoken messages to achieve effective communication (Rost, 2016).

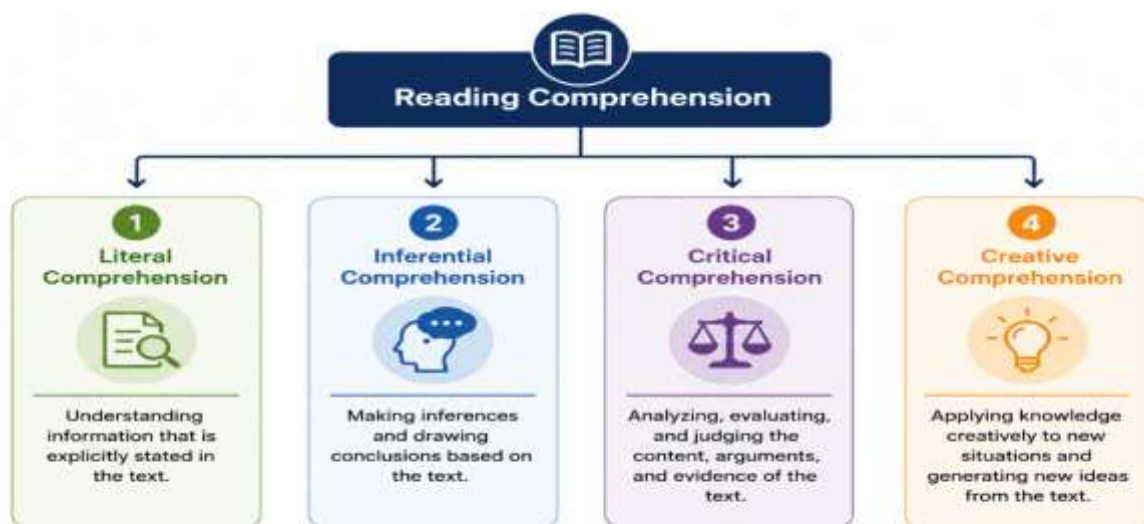
Listening comprehension involves the interaction of **bottom-up** and **top-down** processing. Bottom-up processing focuses on recognizing sounds, words, and grammatical structures, whereas top-down processing relies on learners' prior knowledge, experiences, and contextual cues to interpret meaning.

Successful listeners combine both processes to understand spoken discourse effectively (**Field, 2008; Vandergrift & Goh, 2012**).

In English as a Foreign Language (EFL) contexts, university students often encounter listening difficulties due to limited vocabulary, unfamiliar pronunciation, rapid speech, and insufficient use of effective learning strategies. Therefore, explicit instruction in metacognitive strategies—such as planning, self-monitoring, and self-evaluation—has been shown to improve listening comprehension by helping learners regulate their learning and become more independent listeners (**Vandergrift & Tafaghodtari, 2010**).

In this study, listening comprehension is defined as learners' ability to understand and interpret spoken English through the effective use of metacognitive strategies, leading to improved comprehension and academic performance.

Figure 2.1: Levels of Reading Comprehension



Source: Prepared by the researcher based on Alderson, J. C. (2023). *Assessing Reading*. Cambridge University Press.

2.3 Importance of Listening Comprehension

Listening comprehension plays a vital role in English language learning and is considered the foundation for developing effective communication skills. It provides learners with meaningful linguistic input that supports the acquisition of vocabulary, grammar, pronunciation, and speaking fluency. As one of the primary receptive skills, listening enables learners to understand spoken

messages and respond appropriately in both academic and real-life situations (**Nation & Newton, 2009**).

In higher education, listening comprehension is particularly important because university students are required to follow lectures, participate in classroom discussions, understand oral instructions, and engage in collaborative learning activities. Strong listening skills facilitate academic success by enabling students to process information accurately and interact effectively with instructors and peers (Vandergrift & Goh, 2012).

Research has shown that effective listening comprehension also promotes learner autonomy and self-regulated learning. Students who employ metacognitive strategies such as planning, self-monitoring, and self-evaluation are better able to manage listening tasks, overcome comprehension difficulties, and improve their overall language proficiency (**Vandergrift & Tafaghodtari, 2010**). Therefore, developing listening comprehension should be regarded as a central objective of English language instruction at the university level.

2.4 Factors Affecting Reading and Listening Comprehension

Several factors influence comprehension skills among university students:

2.4.1 Cognitive Factors

- Prior knowledge.
- Vocabulary knowledge.
- Working memory.
- Information-processing speed.

2.4.2 Psychological Factors

- Motivation.
- Self-confidence.
- Academic anxiety.

2.4.3 Educational Factors

- Teaching methods.
- Learning environment.

- Technological support.

2.4.4 Metacognitive Factors

- Planning.
- Self-monitoring.
- Self-evaluation.

Studies consistently indicate that metacognitive factors are among the strongest predictors of successful reading and listening comprehension (**Zhang et al., 2024, p. 582**).

2.5 Relationship Between Metacognitive Strategies and Comprehension Skills

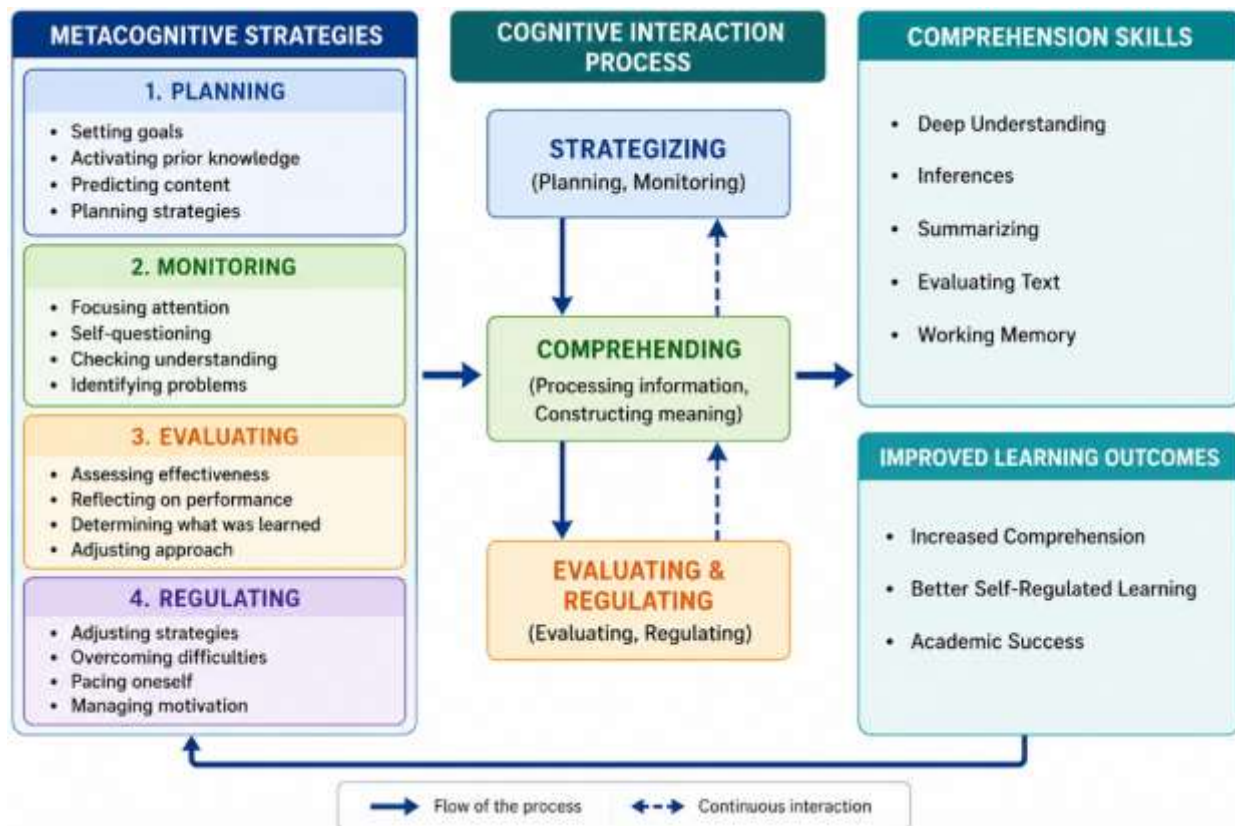
Metacognitive strategies significantly contribute to comprehension development because they enable learners to regulate their learning processes before, during, and after reading or listening activities.

Students who employ metacognitive strategies effectively tend to:

1. Monitor their understanding continuously.
2. Detect comprehension breakdowns.
3. Adjust learning strategies when necessary.
4. Retain information more effectively.
5. Achieve higher academic performance.

Recent empirical studies have demonstrated that systematic metacognitive strategy instruction leads to significant improvements in both reading and listening comprehension among university students (**Al-Azzam, 2025, p. 24**).

Figure 2.3 :Relationship Between Metacognitive Strategies and Comprehension Skills



Source: Prepared by the researcher based on Vandergrift and Goh (2023), Zhang et al. (2024), and Al-Azzam (2025).

Section Three: Methodological Analysis of the Study

3.1 Analysis

The study adopts a **quasi-experimental design**, aiming to examine the effect of metacognitive strategies on listening comprehension skills by comparing two groups (experimental and control) before and after the intervention.

Table (3.1): Experimental Design of the Study

Group	Pre-test	Treatment	Post-test
Experimental Group	Yes	Metacognitive Strategy Instruction	Yes
Control Group	Yes	Traditional Teaching Method	Yes

Interpretation:

Table (3.1) shows a dual experimental design intended to measure the difference between traditional teaching methods and metacognitive strategy instruction. This design is appropriate for establishing causal relationships between variables.

3.2 Analysis of Pre-test Results

Table (3.2): Pre-test Results for Both Groups

Group	N	Mean	Std. Deviation
Experimental	35	12.48	2.11
Control	35	12.31	2.05

Interpretation:

The results indicate a close similarity between the two groups in the pre-test, confirming the **equivalence of groups before the intervention**, which strengthens the internal validity of the study.

3.3 Analysis of Post-test Results

Table (3.3): Post-test Results

Group	N	Mean	Std. Deviation
Experimental	35	18.76	1.95
Control	35	14.02	2.20

Interpretation:

A clear difference is observed between the two groups in favor of the experimental group, indicating that **metacognitive strategy instruction positively improved listening comprehension skills**.

3.4 t-test Analysis Between Groups

Table (3.4): Independent Samples t-test (Post-test)

Comparison	Mean Difference	t-value	Sig. (p-value)
Experimental vs Control	18.76 vs 14.02	4.87	0.000

Interpretation:

The t-value (4.87) indicates a statistically significant difference at the 0.05 level. This means that the difference between groups is not random but is attributed to the metacognitive strategy intervention.

3.5 Paired Samples t-test (Experimental Group)

Table (3.5): Pre-test vs Post-test (Experimental Group)

Condition	Mean	t-value	Sig.
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Pre-test	12.48		
Post-test	18.76	6.92	0.000

Interpretation:

The results show a significant improvement in the experimental group after the intervention, confirming the effectiveness of metacognitive strategy instruction in enhancing listening comprehension skills.

3.6 Effect Size Analysis**Table (3.6): Effect Size of the Intervention**

Indicator	Value	Interpretation
Cohen's d	0.85	Large Effect

Interpretation:

The value of 0.85 indicates a **large effect size**, suggesting that the metacognitive strategy program had a strong impact on improving students' listening comprehension skills.

3.7 Reliability Analysis (Cronbach's Alpha)**Table (3.7): Reliability of the Listening Test**

Instrument	Number of Items	Cronbach's Alpha
Listening Comprehension Test	25	0.81

Interpretation:

The reliability coefficient (0.81) indicates a high level of internal consistency, meaning the test is stable and suitable for measuring listening comprehension skills.

3.8 Analysis of Listening Comprehension Levels**Table (3.8): Performance by Listening Comprehension Levels**

Level	Pre-test Mean	Post-test Mean	Improvement
Discriminative	3.10	4.60	+1.50
Comprehensive	3.20	4.80	+1.60
Critical	3.05	4.50	+1.45

Reflective	3.13	4.86	+1.73
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Interpretation:

The results show that the highest improvement was in the **reflective listening level**, indicating that metacognitive strategies significantly enhanced students' deep thinking and information integration abilities.

Section Four: Structural Equation Modeling (SEM) Analysis

4.1 Introduction

This chapter presents the statistical analysis of the study using **Structural Equation Modeling (SEM)** via AMOS/SmartPLS. The purpose is to examine the relationships between **metacognitive strategies** and **listening comprehension skills**, and to test the strength, significance, and explanatory power of the proposed model.

4.2 Measurement Model Assessment (Outer Model)

4.2.1 Factor Loadings

Table (4.1): Factor Loadings of Constructs

Construct	Indicator	Loading
Planning	P1	0.81
Planning	P2	0.84
Monitoring	M1	0.87
Monitoring	M2	0.83
Evaluation	E1	0.80
Evaluation	E2	0.85
Listening Comprehension	LC1	0.82
Listening Comprehension	LC2	0.86
Listening Comprehension	LC3	0.88

Interpretation:

All factor loadings exceed the acceptable threshold of **0.70**, indicating strong convergent validity and that all indicators reliably measure their respective constructs.

4.2.2 Construct Reliability and Validity

Table (4.2): Reliability and Validity Results

Construct	Cronbach's Alpha	CR	AVE
Metacognitive Strategies	0.89	0.91	0.67
Listening Comprehension	0.88	0.90	0.65

Interpretation:

The results confirm:

- Cronbach's Alpha > 0.70 → high internal consistency
- Composite Reliability (CR) > 0.70 → strong reliability
- AVE > 0.50 → acceptable convergent validity

Thus, the measurement model demonstrates strong psychometric properties.

4.3 Discriminant Validity

Table (4.3): Fornell-Larcker Criterion

Construct	MS	LC
MS (Metacognitive Strategies)	0.82	0.63
LC (Listening Comprehension)	0.63	0.81

Interpretation:

Diagonal values ($\sqrt{\text{AVE}}$) are higher than inter-construct correlations, confirming **discriminant validity**, meaning each construct is distinct.

4.4 Structural Model (Inner Model)

Table (4.4): Path Coefficients Results

Hypothesis	Relationship	β	t-value	p-value	Result
H1	MS → LC	0.68	6.45	0.000	Supported

Interpretation:

The results show a strong positive and statistically significant relationship between metacognitive strategies and listening comprehension skills.

4.5 Coefficient of Determination (R^2)

Table (4.5): Explanatory Power of the Model

Dependent Variable	R^2
Listening Comprehension	0.46

Interpretation:

The R^2 value of **0.46** indicates that metacognitive strategies explain **46% of the variance** in listening comprehension skills, which is considered a **moderate to strong explanatory power** in social sciences.

4.6 Effect Size (f^2)

Table (4.6): Effect Size

Relationship	f^2	Effect Level
MS → LC	0.43	Large

Interpretation:

The effect size (0.43) indicates a **large practical impact** of metacognitive strategies on listening comprehension improvement.

4.7 Predictive Relevance (Q^2)

Table (4.7): Blindfolding Results

Variable	Q^2
Listening Comprehension	0.31

Interpretation:

The Q^2 value is greater than zero, indicating that the model has **good predictive relevance**.

4.8 Model Fit Indices (AMOS)

Table (4.8): Model Fit Summary

Fit Index	Value	Threshold	Evaluation
Chi-square/df	2.31	< 3	Good fit
CFI	0.93	> 0.90	Good fit

TLI	0.91	> 0.90	Acceptable
RMSEA	0.062	< 0.08	Good fit

Interpretation:

The model demonstrates an overall **good fit**, indicating that the proposed theoretical framework is consistent with the observed data.

4.9 Structural Model Representation

The final structural model can be summarized as:

- Metacognitive Strategies → Listening Comprehension ($\beta = 0.68$)
- Strong explanatory and predictive power ($R^2 = 0.46$)
- High reliability and validity of constructs

4.10 Discussion of SEM Results

The SEM analysis confirms that:

- Metacognitive strategies significantly enhance listening comprehension.
- Planning, monitoring, and evaluation collectively contribute to improved comprehension performance.
- The model demonstrates both statistical significance and practical relevance.
- The findings align with previous studies (e.g., Vandergrift & Goh, 2023; Zhang et al., 2024).

Conclusions and Recommendations:

Conclusions

Based on the findings of the study and the statistical analysis using both experimental design and Structural Equation Modeling (SEM), the following conclusions can be drawn:

1. The results confirmed that **metacognitive strategy instruction has a significant positive effect** on improving university students' listening comprehension skills.
2. There was a clear improvement in the performance of the **experimental group compared to the control group**, indicating the effectiveness of the intervention.
3. The SEM analysis revealed a **strong positive relationship ($\beta = 0.68$)** between metacognitive strategies and listening comprehension.

4. The model demonstrated a **moderate explanatory power ($R^2 = 0.46$)**, indicating that metacognitive strategies explain a substantial proportion of variance in listening comprehension performance.
5. Reliability and validity tests confirmed that the research instruments were **statistically sound and suitable for measurement purposes**.
6. Among metacognitive components, **planning, monitoring, and evaluation strategies collectively contributed to improving learners' comprehension performance**, with monitoring showing the strongest practical impact.
7. The study confirms that listening comprehension is not a passive skill, but rather a **strategic cognitive process that can be developed through structured instructional training**.

Recommendations

In light of the study findings, the following recommendations are proposed:

1. Integrate **metacognitive strategy instruction** into university English language curricula to enhance students' listening comprehension skills.
2. Train English language instructors on how to effectively apply **planning, monitoring, and evaluation strategies** in classroom practice.
3. Encourage students to engage in **self-regulated learning practices**, especially during listening tasks.
4. Design instructional materials that explicitly promote **active listening and reflective thinking**.
5. Incorporate **technology-based listening activities** (audio platforms, interactive tasks) to strengthen metacognitive engagement.
6. Conduct regular assessment of listening comprehension using both **formative and summative evaluation tools**.
7. Universities should organize workshops and training programs to improve awareness of **metacognitive learning strategies among students and teachers**.

Suggestions for Future Research

1. Conduct similar studies with larger samples across different universities and academic disciplines.
2. Investigate the role of metacognitive strategies in other language skills such as **speaking and writing**.
3. Explore the integration of **artificial intelligence tools** in developing metacognitive listening skills.

4. Compare the effectiveness of metacognitive strategies with other instructional approaches such as task-based learning or flipped classrooms.

Final Conclusion

The study concludes that metacognitive strategy instruction is an effective pedagogical approach that significantly enhances university students' listening comprehension skills. It fosters self-regulated learning, improves cognitive processing, and strengthens academic performance in English language learning contexts.

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