

Research Article

**Effects Of Cognitive And Metacognitive Strategies On Student Academic Achievement  
In Ten Countries: Systematic Literature Reviews**

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**Abstract**

The Existence Of Different Studies On The Relationship Between Learning Strategies And Academic Achievement Shows A Positive Influence And Has An Efficient Strategy On The Learning Process. This Study Was Conducted Using A Systematic Survey Method, And Also Aims To Investigate The Impact Of Cognitive And Metacognitive Strategies On Student Academic Achievement In Ten Countries Including Malaysia. The Focus Is On The Review Of Articles That Have Been Published In Ten Countries From 2007 To 2021. Research Data Shows That, Learning Strategies Such As Cognitive And Metacognitive Strategies Have Had A Very Significant Impact On The Academic Achievement Of School And University Students In Courses That Different. In General, It Can Be Said That Cognitive And Metacognitive Learning Strategies That Include Research Methodologies Such As Experimental, Quasi-Experimental, Relationship Or Correlation, Questionnaires And Even Meta-Analysis Covering Both Genders Of Students (Women And Men) Are Very Effective To Their Learning In Different Courses (Experimental Science, Mathematics, Tourism, Nursing, Psychology, Foreign Languages And English).

**Keywords:** Systematic Review, Learning Strategies, Cognitive And Metacognitive Strategies, Academic Achievement

**1. Introduction**

Human Achievement In All Areas Of Science Has Increased The Importance Of Learning Strategy Training. The Main Thing In Training Is That Students Are Taught How To Learn, How To Memorize, And Problem -Solving Techniques. Students Should Know The Most Effective Learning Methods And Strategies. Researchers Concluded In Their Study That Most Of The Learning Problems Faced By Students Are Due To Lack Of Study Skills. Learning Strategies Include Cognitive And Metacognitive Strategies That Can Help Students To Achieve Their Desires In Learning. Oxford Defines A Learning Strategy As A Set Of Specific Activities Performed By Students To Be Easier, Faster, More Enjoyable, More Effective, And More Convenient According To A Particular Situation. The Application Of Cognitive And Metacognitive Strategies Is Very Important In Facilitating Learning, The Process Of Remembering, And Memorizing. Cognitive And Metacognitive Strategies Have The Strongest Impact On Student Learning, And There Is A Positive And Significant Relationship Between Learning Methods And Academic Achievement In Universities And Schools (Saied And Mehrabi, 2013; Yang, 2005).

Flavell (2000) Considers Metacognition As A Type Of Knowledge Or Cognitive Knowledge That Involves Aspects Of Cognitive Measurement And How To Organize It. In Other Words, He Believes That This Is A Concept Of Metacognition Because Its Primary Meaning Refers To The Reintroduction Of Cognition. Thus Cognition Refers To The Perception, Processing, Retention, And Transfer Of Information While Metacognition Is An Activity That Encompasses Actions Related To The Four Elements And Controls Mentioned Earlier (Aghazadeh, 2011). Based On Studies That Have Been Done Showing That Metacognition Is Related To Learning,

Learning Practically, Thinking Critically, Problem Solving And Decision Making, All These Efforts Are Required To Achieve Success In Education (Scheifer And Dull, 2009). While Conducting Research, Different Learning And Thinking Methods Or Cognitive And Metacognitive Indicate That These Strategies Can Be Learned, I.E. Teachers Can Use Them Extensively In Different Courses. Teachers Teach These Learning Strategies To Their Students And After That Students Can Use These Strategies Voluntarily And Can Measure Themselves The Positive Effects On Their Learning And Achievement (Saif, 1997)

Weinstein And Hume (1998) As Taken From Saif (1997) Have Stated That Teachers Can Help Their Students Through Teaching, Learning And Learning Skills (Cognitive And Metacognitive Strategies) So That Students Are More Successful And Have A More Active Role In Achieving Their Academic Wealth. Flavell (1979) As Taken By Saif (1997) Who Has Delved Into Cognitive And Metacognitive Strategies, States That Students Apply All Cognitive Strategies To Achieve Their Success And Use Metacognitive Strategies To Control Their Success And Achievement. In Addition, Other Studies Show That There Is A Relationship Between Learning Strategies And Academic Achievement (Karami, 2002). By Training Cognitive And Metacognitive Strategies, Helps Improve Students 'Learning And Increases Their Motivational Confidence In One's Training And Helps Their Academic Achievement. (Beckman, 2002). Shouse, Chen And Hsieh (2007) Emphasize The Importance Of Providing An Education System That Is Appropriate To The Learning Methods Of Students In Schools. If The Educational Materials Suit The Cognitive Style Of The Students, They Will Improve Their Achievement And Better Motivation. Other Studies Have Shown That Using Cognitive Learning Strategies Can Have An Impact On Students 'Learning And Academic Achievement (Meece, 1998).

Training Learning Strategies Can Have A Positive Impact On Academic Achievement (Fardi Yazdi, 2005). The Issue Of Inability To Acquire And Learn Properly, Has Attracted The Attention Of Several Educational Researchers As Well As Experts And Researchers In Recent Years For The School And University Levels. Therefore, To Achieve The Stated Objectives, A Better Understanding Of The Problems That Can Be Learned Is Considered As One Of The Important Educational Objectives And Activities. Therefore, This Study Seeks To Examine The Cognitive Effects And Metacognitive Strategies On The Academic Achievement Of School And University Students Through More Systematic Past Studies.

## **2. Methodology**

This Research Method Uses Various Research Highlights Included In The Literature Research. The Population In This Study Is A Study Related To The Effects Of Cognitive And Metacognitive Strategies On Academic Achievement In Iran And Abroad. The Article Review Period Is From 2007 To 2021. Thus, The Population Includes All Articles Published In Research Journals Indexed In The Sid, Irandoc, Magiran, And Noormags Databases In Iran, As Well As Internationally Published Journals Indexed In The Database Science Direct, Elsevier, Google Scholar Such As American Psychology, Pythagoras Journal, Instructional Pedagogy Journal. This Journal Uses Different Correlations, Factor-Comparisons, Methods And Designs Of Experimental And Quasi-Experimental Research To Investigate The Effects Of Cognitive And Metacognitive Learning Strategies On Indicators Of Academic Achievement. For Primary Investigations, Valid First Keywords Were Determined Based On A Review Of The Literature For Their Use In Locating Primary Studies. Keywords Include Learning Strategies, Cognitive And Metacognitive Strategies, Self-Directed Learning, Academic Achievement, Learning Strategies, Academic Success And Others.

## **3. Findings**

The Objective Of This Study Was To Examine The Effects Of Cognitive And Metacognitive Strategies On The Academic Achievement Of Students In Other Countries By Using A Literature Review. Tables 1 And 2 Show The Results Obtained From Different Articles On The Effects Of Cognitive And Metacognitive Strategies On Student Academic Achievement. In This Table Contains The Name Of The Author And Year Of Publication, The Country Or City Where Each Study Was Conducted, Research Methods And Design, Population, And Finally State The Results Of The Study Conducted.

No	Authors	City	Research	Methodology	Population	Findings
1.	Napapat Thongwichit , Adcharawan Buripakdib  2021	Songkla University Thailand	Premiere	Experimental Group	Tourism Students	This Study Aimed To Explore The Instructional Effectiveness Of Metacognitive Reading Strategies Through Modeling Techniques Of Student Reading Comprehension In The Context Of Esp. A Pre- And Post -Test Study Group Was Conducted With An Experimental Group Of Students Taking An English For Tourism Course. The Results Showed That The Post -Student Test Score Was Much Higher Than Their Pre -Test Scores After Receiving His Treatment (P <0.05). These Results Are Supported By Data From Student Learning Logs Stating That There Is Continuous Progress In Reading For Students Using Metacognitive Strategies. In Addition, Students 'Perceptions Reflected Positive Outcomes On The Use Of Metacognitive Strategies When Reading. In Conclusion, Studies Suggest That Metacognitive Reading Strategies Should Integrated, Not Only In English Reading Classes, But Also In Other Classes That Have Involvement In Reading Activities To Improve Students 'Mastery Of Reading With Strategies Which Improves Their Reading Comprehension.
2.	Cecilia Guanfang Zhao, Linyu Liao  2021	Taipa, Macau, China.	Premear	Survey	200 Efl Students	Empirical Data Factor Analysis Indicates The Main Types Of Strategies Used By Efl Authors Include Time Trial Arrangements. Correlation And Regression Analyzes, However, Showed Limited And Mixed Effects Of The Use Of Such Strategies On Writing Evaluation Performance. The Results Of This Study Require The Treatment And Measurement Of The Use Of More Detailed And Sophisticated Metacognitive Strategies In Future Research, Especially In The Initial Planning Of Instruments, Tests And Effects. Such New Evidence Could Provide

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						Writing Pedagogical Information, Especially In The Face Of The Need To Integrate Metacognitive Strategy Instruction Into L2 Writing Classes.
3.	Mohd Sham Bin Kamis  2017	Seremban/Malaysia	Primear	Eksperimental Ancova	Form 4 Students (Smk Agama)	Although The Study Of Reading Arabic Texts Is Growing In Arabia And Other Countries, It Is Still Uncommon In Malaysia. Therefore, This Study Focuses On The Use Of Arabic Metacognitive Strategies (Mcs) Used By Form 4 Students At Smk Agama In Seremban. In Addition, This Article Aims To Study The Effects Of Mcs The Use Of Arabic Texts In Arabic Comprehension And Vocabulary. Based On Stratified Sampling, 60 Respondents Were Taken From Smka In Seremban To Undergo This Study. The Group Was Divided Into Two Groups, With 30 In The Experimental Group And 30 In The Control Group. This Study Is A Quantitative Research And Is A Numerically Based Research Method That Uses Ancova Test. In This Study, Training Was Given Between Pre -Test And Post Test. Finally, After A Semi -Experimental Study Was Performed, The Findings Showed That There Were Significant Differences In Arabic Language Comprehension And Post -Test Arabic Vocabulary Between The Experimental Group And The Control Group. The Experimental Group Showed Higher Levels Than The Control Group. This Study Contributes To The Field Of Arabic Education From The Perspective Of Comprehension And Vocabulary In Mcs Reading Arabic Text.
4.	Ahmad Nurul Hidayat  2015	Indonesia	Primear	Correlation/ Quantitative	30 Students (Male)	Based On The Results Of This Study It Can Be Seen That Metacognitive Learning Strategies Have A Correlation Positive And Significant With Listening Skills And Reading Comprehension To Class Vii Students Of Mts Al-Amiriyah, Tegalsari District Banyuwangi Regency Academic Year 2013/2014.

5.	Maroofi Et. Al 2014	Iran/Sana ndaj	Primear	Quasi-Eksperiment al	Female Student Of Fifth Grade Of Elementary School	Teaching Using Cognitive And Metacognitive Strategies Has Had An Impact On The Academic Achievement Of Girls In Fifth Grade Primary School
6.	Rasoli Khorshidi At. Al. 20014	Iran/Tehr an	Primear	Path Analysis	Ba Students	Metacognitive Has A Direct Impact On Cognitive Strategy, Basic Strategies, Resource Management And Academic Achievement. Metacognition Has The Greatest Impact On Student Achievement.
7.	Karami Al. 2013	Iran	Primear	Eksperiment al	Male Student Of Grade Three Of The Second Grade Of Primary School	Teaching Using Cognitive And Metacognitive Strategies Enhances Creativity, Motivation, Success, And Self-Learning Concepts.
8.	Salehi At. Al. 2013	Iran	Primear	Correlation	Nursing Students	The Results Of The Study Showed That Nursing Students Who Used Cognitive Strategies “Mental Rapitation And Reheasel ”, More Semantic Development Than Any Other. In Addition, They Use Cases Such As Compiling, Thinking Critically To Be At A Moderate Level For The Process Of Finding Information And Studying In The Surgical Course.
9.	Eluemuno And Azuka 2013	Nigeria	Primary	Experimenta l (Pretest /Posttest)	High School Students	The Results Show That Cognitive Strategy Training And Metacognitive Has A Positive Effect On Achievement Student Academics And Using These Strategies Has Effectiveness In Student Academic Achievement Especially Those English.
10.	Zhang Et Al 2013	China	Primear	Survey/ Qualitative	School Students	To Learn English As A Second Language, Students Use Metacognitive Strategies And There Are Differences Between Students Who Use This Strategy And Those That Do Not Use. The First Group Have Significant Achievement In Their English.
11.	Ganji Et Al. 2012	Iran/ Khorram a Bad	Primear	Correlation	Secondary Female	Using Cognitive And Metacognitive Strategies Effective On The Academic Achievement Of Students

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					School Students	Whether Living In Urban Or Rural Areas. Effectiveness In Using This Strategy Shows Urban Students Use Both Strategies.
12	Taymoir Fard 2021	Iran	Primear	Multiple Regression	Secondary School Students	Iq Is Able To Predict Academic Achievement Has Better Than Metacognition. Moreover, Students With High It Skills Have More Achievement In Academics.
13	Peng 2012	China	Primary	Experimenta l	Male And Female Mb University Student S	The Results Show That Cognitive Strategy Has The Most Impact On Student Scores. Cognitive Strategies, Self -Study, And Anxiety In Exams Is The Most Important Indicator That Affects Improving English Language Learning Performance
14	Masoud Gholamali Lavasani. 2011	Tehran, Iran	Primear	Eksperiment al	Primary School Students	The Purpose Of This Study Was To Examine The Effect Of Self -Regulation Learning Strategy Training On Academic Motivation And Self -Efficacy Of Students. Thus, Twenty -Three Classes Of Primary School Girls Students Were Selected As A Sample. One Of The Classes Was Selected As The Taught Experimental Group Self-Rule Learning Strategies For 10 Sixty-Minute Sessions And The Control Group Received Nothing. At First, The Experimental Group Was Tested With A Motivational Strategy For Learning Questionnaire (Mslq), Academic Motivation Scale And Self-Efficacy Scale, And Then The Scores Of The Two Groups Were Compared In The Post-Test. The Study Design Was A Quasi -Experimental Method With Pre -Test And Post -Test. Data Were Analyzed By Calculating Covariance Analysis (Ancova). The Results Show That The Teaching Of Self -Regulation Learning Strategies Has Had A Significant Impact On Students 'Academic Motivation And Self -Efficacy.
15	Marzita Puteha, Mahani Ibrahim. 2010	Perak Malaysia	Primear	Survey Questionnair e	249 Form Four Science Stream Students.	This Article Presents Findings On Self -Learning Strategies Among Form Four Students In Perak, Malaysia. Case Studies Are Used To Determine The Use Of Self -

						Organized Strategies Among Students And How It Helps Students In Solving Mathematical Problems. Besides That, The Level Of Motivation Among Students Was Also Identified. Data Were Collected Through Motivated Learning Strategies Questionnaire Revision (Mslq-R), Reviewing Students 'Written Responses (Tests) And Interviews. Studies Show The Level Of Motivation And The Existence Of Self -Learning Strategies Among Students. This Research Has Shown That There Is A Strong Relationship Between Self -Regulated Learning Strategies And Students 'Problem -Solving Performance.
16	Toit Et Al 2009	South Africa	Primary	Survey Research	Grade 11 Student S And Math Teacher	Teachers And Students Who Follow Teaching Process And Mathematical Learning Using Metacognitive Strategies Showed Higher Levels Of Satisfaction Than Before Using Metacognitive Strategies. Therefore, Teachers Have Used Metacognitive Strategies In Their Teaching Showing High Satisfaction Rates And Student Achievement Increased Dramatically In Mathematics Subjects.
17	Lee, 2008	South Korea A	Primary	Correlational	Ba Students	The Results Show That Self -Learning Strategies Effective On Students Stratification As Well As The Education System And On Their Academic Achievement. A Student -Centered Learning Environment Is More Enjoyed Than The Content Of Self -Directed Learning Strategies - Or A Teacher -Centered Environment.
18	Dignath, Et Al 2008 30	German Y/Fr Ankf Urt	Primary	Review Meta-Analysis	Articles	Training Program Or Self -Regulatory Strategies Has The Most Impact Even To Academic Achievement Elementary School Students. After Analyzing The Test Results Showed The Effect Of A Number Of Moderate Variables Such As Learning And Training Characteristics. About The Factors Related To Treatment Content, Which Is Effective Against The

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						Literature Theory On Intervention Domain Experiments. Additionally, Cognitive Strategies And Metacognitive Or Motivational Training As Well As Teamwork As Methods Used. They Have A Positive Effect On The Academic Achievement Of Students.
19	Berthold Et Al 2007	German	Premier	Eksperiment al	Psychology Students	Result Shows That Cognitive Strategies Against Students With Combined Strategy Metacognitive Has Significant Impact To Help Students Achieve Success.

#### 4. Analysis And Discussion

This Systematic Literature Review Aims To Look At Students' Academic Achievement After Using Learning Strategies (Cognitive-Metacognitive). Learning Strategies Have A Very Important Role In Explaining Differences In Academic Achievement. The Results Of This Study Show That Cognitive And Metacognitive Strategies Need Each Other So That Students' Academic Performance Can Be Maximized, Both Of These Strategies Should Be Applied Because Most Data Show That Failing To Master Cognitive And Metacognitive Strategies Will Cause Student Performance To Be Low (Mesrabadi, Erfani & Adab, 2014 ). According To A Study Conducted By Napapat Thongwichit (2021) Which Is Supported By Data From Student Learning Logs There Is Stated That, There Is Continuous Progress In Reading For Students Who Use Metacognitive Strategies.

In Addition, Students 'Perceptions Reflected Positive Outcomes On The Use Of Metacognitive Strategies When Reading. In Conclusion, This Study Suggests That Metacognitive Reading Strategies Should Be Integrated, Not Only In English Reading Classes, But Also In Other Classes Engaged In Reading Activities To Enhance Students 'Mastery Of Strategies Capable Of Improving Their Reading Comprehension. Whereas According To Cecilia Guanfang Zhaoa (2021) Who Used Questionnaire Instruments To Test The Effectiveness Of Metacognitive Strategies On Student Writing Development Suggested The Need For Measurement In More Detailed And Sophisticated Metacognitive Strategies For Future Research, Especially In Initial Instrument Planning, Testing And Impact. Such New Evidence Could Provide Pedagogical Information In Writing, Especially When Faced With The Need To Integrate Metacognitive Strategy Instruction Into L2 Writing Classes. The Results Of Different Studies Indicate That Both Cognitive And Metacognitive Strategies Are Highly Effective On Students 'Academic Success And Achievement. The Results Of A Study Conducted By Maroofi (2014) And Karami (2013) Showed That Cognitive And Metacognitive Strategies Had The Greatest Impact On Academic Achievement In Students Taking Experimental Science Courses And Most Students Who Used These Strategies Were More Successful Than Those Who Did Not Use Them. Moreover, The Results Of Salehi's (2013) Study Show That Nursing Students Use Repetition And Training Strategies And Semantic Expansion More Than Structuring Strategies And Critical Thinking. It Can Be Said That This Method Causes Readers To Be Active As They Process Information Through Effective Thinking And There Is Improvement In Terms Of Learning.

While The Findings Of Studies Conducted By Magogwe (2013), Zhang (2013) And Eluemuno (2013) Show That Cognitive And Metacognitive Strategies Are Important To Train And Ensure Good Achievement In English And Academics Of Students On This Course. Metacognitive Strategies Are Very Helpful To Achieve Success In Learning And Academic Achievement And This Issue Is Because Metacognitive Strategies Are Considered In The Learning Process As One Of The Important Cognitive Actions, And Its Role Is To Enhance Students Abilities In Realizing Their Potential. Henk And Graaff (2004) Believe That In Metacognitive Strategies, Students Are Trained With Self -Regulation, Understanding Of Learning Subjects, And A Sense Of Knowing. The Self -



Organizing Student Identifies His Or Her Own Purpose And When He Or She Deviates From Accessing It Purposefully, Actively Manages Learning.

Research Conducted By Peng (2012) And Lee (2008) Showed That Cognitive And Self -Regulatory Strategies Are Effective And Give Students A Positive Perception Of The Education System In Improving Their Academic Performance. Regarding The Results Of Different Studies, It Can Be Seen That Cognitive And Metacognitive Strategies Have A High Positive Effect On Students 'Academic Achievement. It Is Recommended That Cognitive And Metacognitive Strategies Be Simultaneously Considered Curriculum Priorities In Schools And Educational Institutions. Training Cognitive Strategies Such As Doing Mental Exercises Can Help Students Choose Things That Are Important And Worth Remembering And It Is Very Important To Find The Meeting Point Between What Has Been Remembered, Then Processed And Studied (Sifert, 1991).

## 5. Conclusion

This Study Was Conducted With The Aim Of Identifying The Effectiveness Of Cognitive And Metacognitive Strategies On Student Learning Mastery. This Study Also Takes Into Account Aspects Of Teaching And Facilitation Weaknesses (Pdpc), Student Readiness, Low Motivation For Each Student And Their Ability To Master Each Skill Found In Reading Activities As Well As Students' Need To Master Skills Through Self-Learning. An Intervention Plan Was Designed By The Researcher To Help Students Master The Skills Quickly And Quickly That Is To Use Metacognitive Strategies (Preview: Question, Read, Reflect, Recite And Review).

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