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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN READING STRATEGIES AND ENGLISH READING COMPREHENSION PERFORMANCE AMONG IIUM ENGINEERING STUDENTS

BY

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A dissertation submitted in fulfilment of the requirement for the degree of Master of Arts (Teaching English for Specific Purposes)

Kulliyyah of Languages and Management
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ABSTRACT

The study outlined in this dissertation describes the use of reading strategies among IIUM engineering students. It also investigates the relationship between reading strategies and reading comprehension performance among IIUM engineering students. The respondents were 162 students from various departments in the Kulliyyah of Engineering at the International Islamic University Malaysia. In collecting the research data, the researcher used an adopted reading comprehension test (Intaraprasert, 2000) and an adopted Likert scale questionnaire (Kasımi, 2012). The reading comprehension test was used to measure the students' ability to comprehend texts, while the Likert scale questionnaire was used to obtain information about reading strategies used by students in understanding the texts. Data collection of the comprehension test results and reading strategies used are collected in the span of five days. Research data were described and analyzed by using descriptive analysis and multiple linear regression analysis. The results of the study revealed that the students' levels of cognitive and metacognitive reading strategies are high. This indicates that they are high strategy users in both cognitive and metacognitive reading strategies. The research findings also showed that there is no significant relationship between reading strategies and reading comprehension performance among IIUM engineering students. The results of the multiple linear regression analysis showed that the use of cognitive and metacognitive strategies has no contribution to the students' reading comprehension performance. These findings contribute to the current body of literature specifically on the studies of reading strategies and reading comprehension among engineering majors as well as significant for professionals such as practitioners, curriculum developers and designers, and the field of teaching reading to L2 learners of English at tertiary institutions.

Keywords: cognitive strategies; metacognitive strategies; reading comprehension; engineering students.

الملخص

تصف هذه الدراسة استراتيجيات القراءة لدى طلبة كلية الهندسة بهدف اكتشاف العلاقة بين استراتيجيات القراءة والقدرة على فهم المقروء واستيعابه لدى طلبة كلية الهندسة في الجامعة الإسلامية العالمية ماليزيا. يتكون المستجيبون من 162 طالب من الأقسام المتعددة في كلية الهندسة بالجامعة الإسلامية العالمية ماليزيا. واستخدمت الباحثة اختبار الفهم والاستيعاب المعتمد (Intaraprasert، 2000) لقياس قدرة الطلبة على استيعاب النص، وصمّمت الاستبانة بأسلوب ليكرت (Kasmi، 2012) للحصول على المعلومات حول استراتيجيات القراءة التي يستخدمها الطلبة لفهم النص. البيانات لنتائج اختبار الفهم والاستيعاب واستخدام استراتيجيات القراءة تم جمعها في فترة خمسة أيام. وقد اعتمدت الباحثة منهجَيْ التحليل الوصفي وتحليل الانحدار الخطي المتعدد في تحليل البيانات والحقائق التي تتعلّق بطبيعة موضوع البحث. توصّلت الدراسة إلى أنّ المستوى الإدراكي والمستوى ما وراء المعرفي لاستراتيجيات القراءة لدى الطلبة عاليان ممّا يشير إلى أنّهم مستخدمو الاستراتيجيات العالية في الاستراتيجيات الإدراكية وما وراء المعرفية. ودلت النتائج أيضا أن ليس هناك علاقة ذات دلالة إحصائية بين استراتيجيات القراءة واستيعاب المقروء لدى طلبة الهندسة في الجامعة الإسلامية العالمية ماليزيا. وتظهر نتائج تحليل الانحدار الخطي المتعدد أن استخدام الاستراتيجيات الإدراكية والاستراتيجيات ما وراء المعرفية لا تسهمان في أداء الفهم والاستيعاب لدى الطلبة. وتساهم الاستنتاجات لمجموعات الأدبيات الحالية لا سيما للدراسات حول استراتيجيات القراءة واستيعاب المقروء لدى المتخصصين في الهندسة، وهذه النتائج مهمة أيضا للمهنيين مثل الممارسين، ومطوري المناهج الدراسية ومصمميها، ومجال تعليم القراءة لمتعلمي اللغة الثانية وهي الإنجليزية في مؤسسات التعليم العالي.

الكلمات المفتاحية: الاستراتيجيات الإدراكية، الاستراتيجيات ما وراء المعرفي، واستيعاب المقروءات، طلبة الهندسة.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Arts (Teaching English for Specific Purposes)

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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TABLE OF CONTENTS

Abstract ii
Approval Page iv
Declaration v
Copyright Page vi
Acknowledgements vii
List of Tables x
List of Figures xi

CHAPTER ONE: INTRODUCTION 1
1.0 Overview 1
1.1 Background of the Study 1
1.1.1 English for Specific Purposes (ESP) 2
1.1.2 English for Specific Purposes in Malaysia 2
1.1.3 English for Science and Technology (EST) 3
1.2 Reading Comprehension 6
1.3 Reading Strategies 7
1.4 Statement of the Problem 7
1.5 Research Objectives and Research Questions 9
1.6 Significance of the Study 10
1.6.1 Theoretical Implication 10
1.6.2 Practical Implication 10
1.7 Organisation of Thesis 11
1.8 Definition of Key Terms 11
1.9 Chapter Summary 13

CHAPTER TWO: LITERATURE REVIEW 14
2.0 Overview 14
2.1 Reading Strategies 14
2.1.1 Cognitive Strategies 20
2.1.2 Metacognitive Strategies 20
2.2 Reading Comprehension and English for Science and Technology (EST) 21
2.3 Reading Strategies and Reading Comprehension 23
2.3.1 The relationship between Cognitive Strategy and Reading Comprehension 25
2.3.2 The relationship between Metacognitve Strategy and Reading Comprehension 26
2.3.3 Conceptual Framework 27
2.4 Impact of Reading Strategies on Reading Comprehension 29
2.5 Chapter Summary 31

CHAPTER THREE: RESEARCH METHODOLOGY 32
3.0 Overview 32
3.1 Research Design Paradigm/ Worldview 32
3.2 Research Design 34

3.3 Data Collection and Procedures 35
3.3.1 Sample Population 35
3.3.2 Instrumentation 36
3.3.3 Data Collection Procedures 39
3.4 Data Analysis 41
3.5 Ethical Considerations of this Study 43
3.6 Validity and Reliability 45
3.7 Chapter Summary 46

CHAPTER FOUR: RESULTS AND DISCUSSIONS 47
4.0 Overview 47
4.1 Demographic Result 47
4.2 Cronbach's Alpha Value 49
4.3 Respondents' Usage of Reading Strategies in English Reading Comprehension 50
4.3.1 The Level of Reading Strategies of the Respondents 50
4.4 The Relationship between Reading Strategies and English Reading Comprehension 52
4.4.1 The Predictive Values of Cognitive and Metacognitive Reading Strategies Use in Predicting Reading Comprehension Performance in English 53
4.4.1.1 The Relationship between Cognitive Reading Strategies and English Reading Comprehension 56
4.4.1.2 The Relationship between Metacognitive Reading Strategies and English Reading Comprehension 57
4.5 Chapter Summary 58

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION 59
5.0 Overview 59
5.1 Summary of Key Findings 59
5.2 Implication of the Study 61
5.3 Limitations of Study 61
5.4 Recommendations 62

REFERENCES 65

APPENDIX A: THE QUESTIONNAIRE 85

LIST OF TABLES

1.1	Research Objectives and Research Questions	10
1.2	Definition of Key Terms	11
3.1	Summary for First Research Question	42
3.2	Summary for Second Research Question	43
4.1	Frequency of Respondents' Profile	47
4.2	Cronbach Alpha Value for Survey of Reading Strategies	50
4.3	Best Principle Score	51
4.4	The level of Cognitive and Metacognitive Reading Strategies of the Respondents	51
4.5	Multiple Regression between Strategies Use and Reading Comprehenension Performance (n=162)	53
4.6	Summary of Hypothesis	58
5.1	Research Question 1	60
5.2	Research Question 2	60

LIST OF FIGURES

2.1 The Conceptual Framework of the Study 27

CHAPTER ONE

INTRODUCTION

1.0 OVERVIEW

The study's background, description of English for Specific Purposes (ESP) in relation to IIUM engineering students' reading comprehension and strategies is expounded in this chapter. The problem statement, objectives and significance are elaborated further. The chapter concludes with the organization of thesis and definition of key terms.

1.1 BACKGROUND OF THE STUDY

This study focuses on the English reading comprehension strategies among engineering students whereby it is part of English for Specific Purposes (ESP). According to Pleşca, (2016) ESP can be regarded as the teaching and learning of English as a second or foreign language where the learners aimed to use English in a particular academic, professional or occupational domain. In other words, it is the teaching and learning of English concentrating on learners' special needs, which in this case, the English reading comprehension strategies used by engineering students. ESP is distinguishable from English for General Purposes (EGP) which equips learners with basic knowledge and skills of English language at a school level where there are no proper definitions of the students' occupational/professional and higher educational orientations (Islam, 2014). The following discussion aims at exploring the issues of reading comprehension strategies among engineering students against the background of ESP.

1.1.1 English for Specific Purposes (ESP)

Recently, English for specific purposes (ESP) has been regarded as an extension of English language teaching (Johns, 2013; Sarem et al., 2013; Zaki, 2007). According to Islam (2014) "a working definition of ESP can be that it is a comprehensive term which refers to the teaching of English to those students who learn the language for a particular work or study-related reason" (p. 68). Hence, ESP is categorised into i) English for Academic Purposes (EAP); and English for Occupational/Vocational/Professional Purposes (EOP/EVP/EPP) (Jordan, 1997).

English for Academic Purposes (EAP) dealt with students' needs by helping them to cope with the requirements of their areas of study (Al-Lawati, 2016). In the twentieth century, English is the language used in areas of science and technology. Sinadinović and Mićić (2013) stated that, "in many countries, English has become the lingua franca for science and technology; almost all-important discoveries and most research results are now published exclusively in English" (p. 115).

1.1.2 English for Specific Purposes in Malaysia

In Malaysia, English language proficiency is undoubtedly important since this language had been granted as a second language status (Gill, 2002). Majority of Malaysians receive English education as one of the compulsory subjects for a total of eleven years in both public primary and secondary schools. The increasing significance of English in Malaysia was obvious in education and employment prerequisite (Nich, 2005; Shanta, 2000; Ball and Chik, 2001). Malaysia's former Premier, Tun Dr Mahathir Mohamad (Naharul, 2019, para. 3) disclosed to the Parliament of Malaysia that "scientific knowledge is developing constantly, and it is not done in Malay. To acquire and master new knowledge, the English language is needed. We will not have

translations of new knowledge in Malay, unless there are science experts who can understand both languages and the matter to be translated". Moreover, he explained that a good fluency in English will help a person to gain direct access to new scientific knowledge because the knowledge is widely available in English.

According to Too (2017), Malaysia's higher education industry had been liberalized since 1996 in order to elevate Malaysia as an education hub. Since then, English language was pivotal in higher education (Too, 2017). The 2005 academic year witnessed the change of medium of instruction in public universities from Bahasa Malaysia to English language for certain courses such as mathematics, science and technology (Middlehurst & Woodfield, 2004; Mysinchew.com, 2009). Moreover, the education system also focuses on the significance of English in Malaysian schools and institutions of higher learning. Scientific and technological information is easily accessible through a proficiency in English. Furthermore, the extensive use of English as in education is due to it being the language of Science, Technology, Engineering and Mathematics (STEM). As more private colleges offer twinning programs with foreign universities and colleges, English becomes an indispensable medium for knowledge acquisition in Malaysia's institutes of higher learning particularly in STEM-related courses.

1.1.3 English for Science and Technology (EST)

English for Science and Technology (EST), which is the main and oldest branch of EAP, is considered to be the most suitable form of ESP to equip engineering students with the proficiency they need for academic and career development. Thus, undoubtedly English is important in engineering education (Shrestha et al., 2015; Rahima et al., 2017). According to Curry and Lilis (2015), English currently

dominates areas of science and research, consequently, it is essential to master reading skills when reading texts in English to attain knowledge required for academic and professional development (Darling-Hammond et al., 2020).

English is extensively used as interpersonal communication in areas of administration, politics, business and STEM as English is seen as the global language of education, science and technology. As English is a language with global influence, universities, even the ones in Malaysia, employed English as the medium of instruction for their undergraduate STEM courses namely, engineering. English is a second language in Malaysia and taught in schools and tertiary levels (Hazita , 2016). Moreover, it is prominently used in academic publications. For engineering students, being proficient in English is not an option as they need the competency to cope with engineering-related academic and professional demands. Therefore, students need to frequently manipulate and accommodate reading strategies with the aim of using the correct strategy in the attempt to understand texts based on their specific contexts. Thus, the focus of the professionals in the education field should be on helping engineering students to find suitable reading strategies that would help enhance the capacity to understand reading texts.

With English expansively used in the publication of engineering journals, periodicals and books, engineering students need to have the required proficiency to cope with the demands of their own field of study. Panyawong-Ngam et al. (2015) stressed that engineering students to have the language competency that will help them comprehend, explain and scrutinize their academic content and related areas of knowledge. Their views were in line with earlier ESP literature investigating language in engineering contexts stressing that engineers must be highly proficient in English as it would help them progress academically and professionally (Ting et al., 2017).

English for Specific Purposes (ESP) helped engineering students to gain better education by helping learners to focus on engineering terminology and attain required skills for workplace communication (Riemer, 2002).

The needs for EST grow especially for engineering students (Porcaro, 2013). To ensure that engineering majors in a Japanese would have the necessary English proficiency, EST was taught as Engineering English for a semester. The approach was introduced to facilitate comprehension of specialized texts and the course's activities and supporting materials were developed to help engineering students improve their comprehension skills when tasked to read complex science and engineering journals. According to Porcaro (2013), the module was developed to assist engineering students enhance their English language competency to strengthen their ability to comprehend English texts from areas of engineering and science. Thus, both approaches emphasize the significance of reading comprehension in EST.

While investigating metacognitive strategies among Korean EFL learners, Song (1998) discovered that utilizing specific strategies could help these students to develop reading comprehension abilities. This finding corroborated Streveler et.al. (2008) who emphasized the importance of assisting engineering students learning engineering concepts and theories as they engage themselves academically at their own pace. Metacognition has been acknowledged as a process that supports the significance of regulating conceptual learning in engineering-related disciplines (Case et.al., 2001). Other studies by Tan (1986) , Anderson (1991) and Chen and Donin (1997) suggested that higher cognitive strategies (accessing prior knowledge, inferring) should be employed among EFL readers when reading scientific texts. This was proposed because EFL readers have the tendency of compensating their limited L2 proficiency with their prior knowledge when reading their respective disciplines. Hamid and Samuel (2013) further expounded that as English is fast becoming the language used

for scientific and technological papers, students majoring in related areas of disciplines have to be cognitively competent especially when reading scientific texts.

1.2 READING COMPREHENSION

McKee (2012) defined reading comprehension the capability of understanding texts, analysing data and interpreting writers' narrative messages accurately. Therefore, reading comprehension is crucial to ensure that learners can cope with learning (Sandberg & Norling, 2020). Furthermore, Nation (2019) explained that the being able to read and comprehend what is read cannot be underestimated as a good reader will have better mastery of their learning. Consequently, mastering comprehension is not an option as science students must become good readers as their academic achievement is dependent on how well they read and how much they understand (Cruz Neri et al., 2019).

In the context of Malaysian education system, English is placed as the second language (Gill, 2002). Hence for students who are not using their first language but L2 learners of English, reading is a daunting task (Spencer & Wagner, 2017). Corroborating this view, Puteri Rohani et al., (2017) reported that L2 learners of English tend to have poor comprehension skills and due to that, they could not cope with reading texts as they fail to associate ideas from the texts to what they are tasked to do. Their poor comprehension is often plagued by their lack of vocabulary and inability to associate texts to contexts (Sari, 2016). Although English is second to Malay language in importance, not all Malaysian learners are proficient in the language (Darmi & Albion, 2013). Hence, this study believes that as students in Malaysian context face many difficulties in reading, their reading comprehension performance can be enhanced by using reading strategies.

1.3 READING STRATEGIES

According to Chan and Wong (2004), Malaysian universities' learners have literacy problems in English language and "competence in English among learners has been on the decline since a change in language policy was changed from that of English to Bahasa Malaysia in 1970" (p. 1). To overcome this, L2 learners of English can improve reading comprehension skills by employing cognitive and metacognitive reading strategies (Ali & Razali, 2019). Thus, previous studies investigated whether cognitive and metacognitive reading strategies are interconnected and if they have notable influence students' ability to understand the texts' read. Consequently, connection between use of cognitive and metacognitive strategies and reading comprehension have been explored by employing multiple correlation analysis (Purpura, 1997, 1998; Phakiti, 2003; Naeni & Rezaei, 2015). These studies showed that students' reading is positively influenced using the said strategies. Several researchers investigated reading strategies' contribution on students' ability to understand reading texts (Kummin & Rahman, 2010; Al- Alwan, 2012; Yakupoglu, 2011; Zare & Othman 2013).

1.4 STATEMENT OF THE PROBLEM

According to Sidek and Wahi (2018), Malaysia has more than 31 public and private higher institutions. English is used in private universities as their medium of instruction whilst, two 4-year public higher institutions in Malaysia use English and Arabic as their mediums of instruction. Additionally, English language is used to teach courses other than Islamic Studies at these universities. However, Sidek (2017) highlighted that previous studies reported that Malaysian learners continuously faced difficulties mastering English despite the subject being taught in schools.

Tertiary students in Malaysia are often considered as having inadequate ability to think and read critically. A number of academics supported this claim due to Malaysian university students' inability prepare themselves read complex texts critically (Nambiar, 2007; Pandian, 2007; Thang & Azarina, 2008; Koo, 2011, 2008, 2003). Crismore (2000), who taught in Malaysian universities for five years, believed that most university students are not ready to read academically particularly when tasked to read academic materials. Morever, Rofiza (2015) highlighted that Universiti Teknologi MARA (UiTM) engineering students' English language proficiency are not up to the required expectations. She also mentioned that exposure to learning is necessary in promoting their reading comprehension ability and ingenuity as Malaysian employers reported that current engineering graduates lack creativity skills essential for professional development

Comprehending engineering texts is a challenge of its own, especially for those new to the course. A study by Noraini et al. (2015) involved second and third year engineering students from three of Universiti Teknikal Malaysia Melaka's (UTeM) engineering faculties discovered that 44% of the respondents initially faced certain levels of difficulties when trying to understand engineering texts, 37% disagreed and 18% were not sure whether they found it difficult or not when they started the course. Furthermore, the findings also showed that 39% respondents still had difficulties in understanding engineering texts while 30% disagreed. Meanwhile, 31% respondents cannot be sure whether they still had the difficulties in understanding engineering texts.

Most L2 learners of English might not know what these reading strategies are due to lack of exposure. Nurazila et al. (2011), whose study involved sixty (60) third semester engineering students from UiTM Penang, measured their level of awareness on the importance of reading strategies. They discovered that learners were aware of

some reading strategies and utilized them when reading academic materials. However, their awareness' levels were varied as they were not aware of the type of strategies and they perceived a certain strategy unless they were informed. Therefore, they would not have the knowledge on how to manipulate reading strategies as ways of enhancing their comprehension and capacity to memorize what was read (Nurazila et al., 2011).

Although engineering-related academic materials are in English, studies investigating reading strategies link to reading comprehension among engineering students in Malaysia are scarce, hence, it is timely that an investigation on reading strategies and its influence on English reading comprehension performance to be conducted.

1.5 RESEARCH OBJECTIVES AND RESEARCH QUESTIONS

This study focused on examining whether reading strategies is notably linked to IIUM Engineering students' ability to understand texts in English. Currently, reading strategies among students is investigated frequently for their contribution in reading comprehension. Thus, this study investigates the type of reading strategy used in relation to English comprehension performance among International Islamic University Malaysia (IIUM) Engineering students as English is used as the university's medium of instruction. Thus, it is important to understand how students learn engineering in English and how they cope with reading materials. According to Nuraihan Mat Daud (as cited in Aminuddin, 2012), the strict English language requirement laid by IIUM is due to the need of the students to have English language proficiency in order for them to learn anything at the university. Additionally, the university has an international population where English is either their second or foreign language.

Table 1.1 Research Objectives and Research Questions

Research objectives	Research questions
To identify the level of reading strategies among IIUM Engineering students.	What is the level of reading strategies among IIUM Engineering students?
To examine the relationship between reading strategies and English reading comprehension performance among IIUM students.	What is the relationship between reading strategies and English reading comprehension performance among IIUM Engineering students?

1.6 SIGNIFICANCE OF THE STUDY

1.6.1 Theoretical Implications

The study's findings contributes to current body of literature specifically on studies on reading strategies and reading comprehension among engineering majors. Practitioners can focus on teaching reading strategies that enhance students' ability to read materials in English. Likewise, curriculum developers and designers can use the findings to shape the contents and learning experiences of the curriculum in a way that teachers and policy makers will be compelled and induced to incorporate reading strategies in their lessons and curriculum to help students gain maximum benefits from the strategies and eventually able to comprehend every text they have to read.

1.6.2 Practical Implications

The findings are significant for professionals such as practitioners, curriculum developers and designers. Professionally, this study contributes the field of teaching reading to L2 learners of English at tertiary institutions. Moreover, from a practical aspect, the findings can help students enhance their ability to understand written texts.

1.7 ORGANIZATION OF THESIS

The study's aim is explained in the introduction. Reading strategies and reading comprehension are defined and their correlation discussed. Besides, this chapter also focused on presenting the problem statement, research objectives and significance of the research. In the second chapter, Literature Review, previous studies on reading strategies, reading comprehension and their connection are discussed. Chapter three discusses the methodology and the data collecting tools are explained. Analyzed data are discussed in Chapter four while chapter five concludes the study and puts forth recommendations for further research.

1.8 DEFINITION OF KEY TERMS

Table 1.2 Definition of Key Terms

Terms	Definition
English for Specific Purposes (ESP)	Orr (2005, p.9) defines ESP as a branch of English language education that puts particular emphasis on teaching learners particular English domains to ensure that they are equipped with necessary language skills that would help them academically and professionally.
English for Science and Technology (EST)	According to Li & Li (2015, p.161), EST is a form of English commonly used in

	academic-related materials for example research articles, text books, reports and lectures.
Reading strategy	They are "deliberate actions that readers take actively to develop an understanding of what they read" (Winograd & Hare, 1998, p.275).
Reading comprehension	Kirby (2007, p.1) describes reading comprehension as "process by which we understand the texts we read".
Cognitive Strategies	Cognitive strategies are mental processes that directly looks into how the brain processes information as part of how the learner learns to obtain, store, store, retrieve or utilize information. (Williams & Burden, 1997)
Metacognitive Strategies	Metacognitive strategies involved "checking the outcome of any attempt to solve a problem, planning one's text move, monitoring the effectiveness of any attempted action, testing, revising, and

	evaluating one's strategies for learning" (Brown, 1994, p. 115).

1.9 CHAPTER SUMMARY

This chapter explains ESP in general and proceeded to present information on ESP in Malaysia. Furthermore, a brief information on reading comprehension and reading strategies and their significance in EST have been provided. Problem statement is described followed by the research questions. By doing so, the chapter briefly introduced the research area and outlined the background and rationale for the present study. The study inquires the relationship between reading strategies and reading comprehension among IIUM engineering students. Definition of terms concluded the chapter.