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An Investigation into Vietnamese University Students' Reading Strategy Use and their Academic Majors

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ABSTRACT: This paper aimed at investigating the frequency of strategies employed by Vietnamese university students of various academic majors in their English reading comprehension. Data was collected through a questionnaire delivered to 963 Vietnamese university students majored in Finance-Banking, Accounting, Administration, Technology, Medicine, and Social Science and Humanity (SSH).

The results of the study reveal that students' future careers have affected their frequency of reading strategy use. Finance-Banking students reported the highest overall use of reading strategies, while Medicine students showed the lowest. Significant differences were found in the use of Cognitive, Affective, and Sociocultural strategies, with the largest differences in Cognitive strategies. However, no significant differences were found in the use of Metastrategies. Regarding the use of individual strategies Finance-Banking students used ten strategies more frequently than others, while Medicine students used them the least.

The findings of this study may be used as significant reference for educational administrators in universities in Vietnam to design English language programs that encourage the use of reading strategies by students of all academic majors to enhance their academic performance and success in future careers.

Key words: reading comprehension, reading strategies, differences, academic majors

I.   INTRODUCTION

Reading comprehension is "the ability to understand, use, and reflect on written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society" (Paris & Hamilton, 2009). It is also beneficial for students to access the world of knowledge, summarize information from various sources, and learn new topics and success in education (Murnane et al., 2012). Therefore, being involved the capacity to accurately grasp and interpret written material reading comprehension is an essential skill vital for both academic achievement and daily activities. Beyond academics, strong reading comprehension skills foster critical thinking, enhance communication abilities, and provide a foundation for lifelong learning. In a world increasingly driven by information, the capacity to read and comprehend complex texts is more important than ever, equipping students with the tools they need to navigate and succeed in an ever-evolving landscape. Reading comprehension, in fact, is closely linked to the ability to use effective reading strategies since Pardo (2004) defines it as "a process in which readers use strategies to construct meaning from text."

In this study, the author sought to explore whether there were significant differences in how students from various academic majors employed strategies for comprehending English texts. The primary objective was to address the question: "Do students of different academic majors exhibit significant variations in their utilization of reading strategies?"

II.   LITERATURE REVIEW

1. Reading Strategies

Reading strategies refer to the mental operations involved when readers purposefully approach a text. They indicate how readers conceive a task, what textual cues they attend to, how they make sense of what they read, and what they do when they do not understand (Barnett, 1988; Block, 1986; Brantmeier, 2002). Reading strategies are also defined as actions that readers select deliberately and control to achieve goals or objectives (Paris, Wasik, & Turner, 1991; Pressley &Afflerbach, 1995; Carrell, Gajuusek & Wise,1998). In addition, Yang (2004) characterizes reading strategies as conscious and deliberate activities that readers take to help their reading in acquiring, storing, retrieving information and construct meaning from the text.

Various authors have suggested different ways to classify reading strategies, considering factors such as the reading purpose, cognitive processes involved, or the type of text. These classifications differ in the number and types of strategies they identify, and there is ongoing debate about the most effective way to categorize reading strategies.

Rapid changes in students' learning methods, especially since COVID-19, have forced the students to be even more proactive in their own learning process, especially in their learning how to read in English more effectively. Due to its outstanding characteristics, the Oxford's (2013) Self-Strategic Regulation (S2R) model is applied and regarded as the theoretical framework of the study.

In the S2R model, reading strategies are described as "deliberate, goal-directed attempts to manage and control efforts to read the L2" (p.12). It considers readers as strategic, self-regulated learners who employ various tactics to address challenging reading tasks. These readers choose from multiple strategies to find the most suitable ones for their specific reading goals and contexts (Oxford, 2013).

The S2R model offers a comprehensive framework for self-regulated learning, encompassing strategies from three dimensions: Cognitive, Affective, and Sociocultural-Interactive. The Cognitive dimension includes strategies for building, transforming, and applying knowledge of a second or foreign language. The Affective dimension consists of strategies for promoting positive emotions, attitudes, and maintaining motivation. The Sociocultural-Interactive dimension involves strategies for managing communication, sociocultural contexts, and identity.

These three dimensions are influenced by three types of metastrategies. Metacognitive strategies go beyond Cognitive strategies by aiding in the overall management and control of Cognitive strategies. Meta-affective strategies help regulate the use of Affective strategies, while Meta-Sociocultural-Interactive strategies assist in managing Sociocultural-Interactive strategies.

Metastrategies play a crucial role in the S2R model, offering executive control and management functions that enable readers to decide when and how to use specific strategies and evaluate their effectiveness. The strategies and metastrategies in the S2R model are adaptable and responsive to the learner's evolving needs in various sociocultural contexts and for different purposes.

2. Some revious studies

A quite comprehensive study was conducted by Peacock and Ho (2003) to examine the use of 50 common second language learning strategies among 1,006 students from eight disciplines- building, business, computing, engineering, English, math, primary education, and science- at a university in Hong Kong. Data was collected using a combination of a standard questionnaire, Oxford's Strategy Inventory for Language Learning, and in-depth interviews. The study results revealed that English students employed the most strategies, while computing students used the fewest. Specific deficiencies in strategy use were identified across different disciplines, such as the notably low use of metacognitive strategies among computing students.

Chen and Intaraprasert (2014) carried out a different study when they investigated the use of reading strategies by university Business English majors in relation to their levels of exposure to specialized courses. A large number of students- 926 university Business English majors from 6 universities in Southwest China taking part in this study were asked to fill in a Strategy Questionnaire for Business English Reading. The reading questionnaire comprised 45 strategy items, which were classified into 3 categories: 1.PRS category (Pre-reading Strategies), 2.WHS category (While-reading Strategies), and 3. POS category (Post-reading Strategies). The WHS category (While-reading Strategies) was further divided into SCT (Strategies for Comprehending the Text) and SCD (Strategies for Coping with Difficulties) sub-categories. The results have indicated that the overall use of reading strategies between the students with less and more exposure to specialized courses had no significant variations. At the category level, the students with less exposure to specialized courses reported significantly more use of the strategies in the POS category than the students with more exposure to specialized courses, while the students with more exposure to specialized courses reported using the strategies in the SCT sub-category of WHS category significantly more frequently than the students with less exposure to specialized courses. In terms of the individual strategy use, eighteen out the forty-five strategies across the questionnaire showed significant variations. Overall, the students with less exposure to specialized courses reported employing the individual strategies significantly more frequently than the students with more exposure to specialized courses.

The topic of English reading strategies has also attracted the attention of many researchers in Vietnam. Ngoc Minh & Nguyen Nga (2019) conducted a research to investigate how Vietnamese non-English major students used reading strategies. Data collected through a questionnaire from 117 sophomores majored in Economics, Accounting and Construction showed that Vietnamese non-English majors were medium strategy users. Of the three types of reading strategies, cognitive strategies were the most frequently used, followed by metacognitive and support reading strategies. Similarly, a recent study by Ha et al. (2023) on one hundred and fifty NLU freshmen revealed that the students used different reading strategies. Among the reading strategies,

cognitive strategies were used more frequently (M=3.75) than metacognitive and socio- affective strategies (M=3.74 and M=3.63, respectively).

III.   METHODOLOGY

1. Participants

This study involved 963 Vietnamese university students of different academic majors. For a better analysis, the academic majors were categorized in six major groups: Finance-Banking included Finance and Banking; Accounting; Administration consisted of Business Administration, Economics, and Human Resource Administration; Technology included Information Technology; Medicine; and Social Science and Humanity (SSH).

The number of participants of Finance-Banking major was the highest (N=252=26.2%), then the students of Technology (N=194=20.1%), Administration (N=156=16.2%), Accounting and SSH were quite the same (N=139 &140=14.4 &14.5%, respectively), and Medicine was the lowest (N=82=8.5%).

TABLE 1. ACADEMIC MAJORS OF PARTICIPANTS

	Major	Frequency	Valid Percent	Cumulative Percent
Valid	Finance- Banking	252	26.2	26.2
	Accounting	139	14.4	40.6
	Administration	156	16.2	56.8
	Technology	194	20.1	76.9
	Medicine	82	8.5	85.5
	SSH	140	14.5	100.0
	Total	**963**	**100.0**	

2. Instruments

Because of its salient advantages, especially it is self-administered and can be given to large groups of participants at the same time, which can assure more uniform and standard, and more accurate collected data, a questionnaire was chosen as the research instrument for this study.

The questionnaire used in the present study consists of two parts:

- Part One designed to gather the information about individual characteristics of the participants required the subjects to supply their ethnographic data, such as gender, age, time of English study, major, and reading proficiency.

- Part Two included nineteen statements appropriate to nineteen different strategies applied in reading comprehension. These questionnaire statements, which are broad, teachable actions that readers choose from among alternatives and employ for second/foreign language learning purposes, were adopted from the S2R strategy model by Oxford (2013).

The nineteen statements based on Oxford's (2013) strategy taxonomy were divided into four sections, corresponding to four strategy categories: Metastrategies, Cognitive strategies, Affective strategies, and Socio-cultural Interactive strategies. However, for the participants' ease the name of each strategy category was replaced by Group 1 (Metastrategies), Group 2 (Cognitive strategies), Group 3 (Affective strategies), and Group 4 (Socio-cultural Interactive strategies).

Group 1 consisting of eight strategies aims to help readers manage and control the reading process in a general sense, with a focus on understanding readers' own needs and using and adjusting the other strategies to meet those needs, for example planning, organizing, monitoring, evaluating, etc.

Group 2 includes six strategies, which help readers remember and proceed the reading process, such as activating knowledge, constructing, transforming, etc.

The third group consisting of two strategies helps readers handle emotions, beliefs, attitudes, and motivation in their reading process.

Group 4, which includes three strategies, supports readers to deal with issues of contexts, communication, and culture in their reading comprehension.

The external reliability of the questionnaire was assured as all the nineteen items in the questionnaire were replicated from Oxford's (1990) Strategy Inventory for Language Learning (SILL) which has been applied by a number of other researchers across the world in the field (Kaylani, 1996; Oxford, 2001).

For each questionnaire statement, five alternative choices were provided. Participants were asked to select one from among the followings:

1 for Never or almost never true of me

2 for Usually not true of me

3 for Somewhat true of me

4 for Usually true of me
5 for Always or almost true of me
　　　The higher the number that respondents indicated applied to them, the more frequent the use of the particular strategy was reflected.

3. Data collection and analysis
　　　The questionnaires were delivered to the participants of different universities at different time. The main aim of using the strategy questionnaires was to draw out the types and frequency of use of reading strategies by the participants when they read General English texts.

　　　Before starting the procedures the researcher contacted the administrators of each university to ask for permission of conducting the data collection of the research. Then the participants of each university were informed about the time they would be completing the questionnaires.

　　　At the beginning of the procedures all of the participants were introduced to the purpose of the study and were explained that all information reported by them would be used for research purposes only. The students then were given guidelines and instructions for completing the questionnaires. Although the questionnaires and the explanation were in Vietnamese the participants were encouraged to ask the researcher for anything they did not understand or were not clear. The students then filled in the two parts of the questionnaires, which took about thirty to forty minutes.

　　　The data was then analyzed by SPSS 20.0.

IV.　　RESULTS
　　　The study examined the participants' reports on the reading strategy questionnaire to address the research question. Descriptive statistics, including means and standard deviations, were applied to examine the overall utilization of reading strategies, the implementation of each strategy category, and the usage of each individual strategy by students of different academic majors.

　　　Table 2 shows the means and standard deviation of the overall strategy use by students of different academic majors. The results indicate that students majoring in Finance-Banking used strategies the most frequently with M=3.01 (S.D=1.04) and students of Medicine used strategies the least frequently in their English reading with M=2.61 (S.D=0.96).

**TABLE 2. PARTICIPANTS' OVERALL STRATEGY USE
BY ACADEMIC MAJORS**

Academic Major	N	Overall Strategy Use	
		Mean	**S.D**
Finance- Banking	252	3.01	1.04
SSH	140	2.96	1.00
Administration	156	2.91	1.06
Accounting	139	2.88	1.52
Technology	194	2.84	1.05
Medicine	82	2.61	0.96

　　　Descriptive statistics, including means and standard deviations of the use of four reading strategy categories across the six academic major groups are performed in Table 3.

**TABLE 3. THE USE OF STRATEGY CATEGORIES
BY ACADEMIC MAJOR GROUPS**

Academic majors	N	META		COG		AFF		SOCIO	
		M	**S.D**	**M**	**S.D**	**M**	**S.D**	**M**	**S.D**
Finance- Banking	252	2.78	0.68	3.41	0.87	2.99	0.95	2.87	0.85
Accounting	139	2.71	1.52	3.01	0.84	2.99	1.07	2.80	0.82
Administration	156	2.59	0.73	3.24	0.84	2.81	0.94	2.82	0.89
Technology	194	2.52	0.65	3.23	0.83	2.76	0.97	2.77	0.82
Medicine	82	2.77	0.71	2.80	0.79	2.59	0.91	2.48	0.86
SSH	140	2.66	0.71	3.39	0.74	2.94	0.91	2.88	0.84

　　　A one-way MANOVA was conducted to determine the effect of academic majors on the four dependent measures- scores of the use of each category- Metastrategies, Cognitive, Affective, and Socio-

cultural Interactive strategies. Significant differences were found on the dependent measures with p=0.000. The results mean that the participants' academic majors were related to their use of each reading strategy category. Therefore, a conclusion can be made that the participants' use of reading strategy categories was significantly dependent on their academic majors.

Follow-up Tests of Between-Subjects Effects were conducted to determine how the dependent variables (the use of four strategy categories) differed for the independent variable (the participants' academic majors). The results show that there were significant differences in the participants' use of three categories: Cognitive, Affective, and Socio-cultural Interactive categories (p=0.000; p=0.006; p =0.001, respectively) while no significant differences were found in Metastrategy category (p =0.61). This result suggests that students of different academic majors used Cognitive, Affective, and Socio-cultural Interactive strategy categories at different levels of frequency.

Multiple comparisons using Post hoc LSD method were then performed to compare the use of the four reading strategy categories among participants of one academic major and those of the other five majors. The figures show that there were significant differences in the use of Cognitive strategies among students of different academic majors. Students majoring in Finance-Banking overwhelmed in the use of this strategy category while students in Medicine and Accounting reported using the strategy categories less frequently than those of the other majors. In addition, Medicine students also showed less frequency in the use of Socio-cultural Interactive strategies than their counterparts. The results reveal that Finance-Banking and Accounting students used all types of strategies more frequently than those majoring in Medicine.

A one-way ANOVA was taken to clarify the differences in the use of strategy categories by students of different academic majors. The figures in Table 4 indicate that the mean scores of the use of Cognitive strategies were different by students of different academic majors, meaning that academic majors had effect on the students' use of Cognitive strategies.

TABLE 4. ANOVA F-TEST ON EFFECT OF ACADEMIC MAJORS ON STUDENTS' READING STRATEGY USE

		Sum of Squares	df	Mean Square	F	Sig.
METASTRATEGIES	Between Groups	460.292	5	92.058	2.096	.064
	Within Groups	40591.819	924	43.931		
	Total	41052.112	929			
COGNITIVE STRATEGIES	Between Groups	1162.136	5	232.427	9.433	*.000*
	Within Groups	22791.022	925	24.639		
	Total	23953.158	930			
AFFECTIVE STRATEGIES	Between Groups	61.124	5	12.225	3.321	.006
	Within Groups	3400.941	924	3.681		
	Total	3462.065	929			
SOCIO- CULTURAL INTERACTIVE STRATEGIES	Between Groups	100.398	5	20.080	3.098	.009
	Within Groups	5994.962	925	6.481		
	Total	6095.360	930			

Another ANOVA was conducted to determine the effect of academic majors on the use of individual reading strategies. The Levene's Test or the Test of Homogeneity of Variances is performed in Table 5.

TABLE 5. TEST OF HOMOGENEITY OF VARIANCES ON INDIVIDUAL STRATEGY USE

	Levene's Statistic	df1	df2	Sig.
S1 Paying attention	1.250	5	925	.284
S2 Planning	1.373	5	925	.232
S3 Obtaining and Using Resources	.994	5	925	.420

S4 Organizing	2.870	5	924	*.014*
S5 Implementing Plans	1.696	5	925	.133
S6 Orchestrating Strategy Use	3.028	5	925	*.010*
S7 Monitoring	1.886	5	925	.094
S8 Evaluating	.215	5	925	.956
S9 Using the Senses to Understand and Remember	3.393	5	925	*.005*
S10 Activating Knowledge	.546	5	925	.741
S11 Reasoning	.994	5	925	.420
S12 Conceptualizing with Details	1.818	5	925	.107
S13 Conceptualizing Broadly	3.338	5	925	*.005*
S14 Going Beyond the Immediate Data	1.367	5	925	.234
S15 Activating Supportive Emotions, Beliefs, and Attitudes	1.270	5	925	.275
S16 Generating and Maintaining Motivation	1.052	5	924	.386
S17 Interacting to Learn and Communicate	1.225	5	925	.295
S18 Overcoming Knowledge Gaps in Communicating	.472	5	925	.797
S19 Dealing with Sociocultural Contexts and Identities	1.674	5	925	.138

The null hypothesis of the Levene's Test was that the variances were equal. The test was significant with p=0.014, 0.010, 0.005, 0.005 <0.05 in the use of four strategies (Organizing, Orchestrating Strategy Use, Using the Senses to Understand and Remember, and Conceptualizing Broadly). Thus, the null hypothesis can be rejected and it cannot be assumed that the variances were equal between the groups with variances. Technically, this means that the t-test with unequal variances was the right test to answer our research question.

A further examination with the ANOVA was proceeded, which reveal significant differences in the use of seven strategies with *p*-value=0.000<0.001 (Using the Senses to Understand and Remember, Activating Knowledge, Reasoning, Conceptualizing with Details, Conceptualizing Broadly, Going Beyond the Immediate Data, and Dealing with Sociocultural Contexts and Identities). So we can confirm that academic majors had influence on the students' use of individual reading strategies.

Multiple comparisons using LSD method were performed to compare the use of the nineteen strategies among participants of different academic majors. The results indicate that students majoring in Finance-Banking used ten strategies (Paying attention, Obtaining and Using resources, Monitoring, Using the Senses to Understand and Remember, Reasoning, Conceptualizing with Details, Conceptualizing Broadly, Going Beyond the Immediate Data, Activating Supportive Emotions, Beliefs, and Attitudes, Generating and Maintaining Motivation, Interacting to Learn and Communicate, Overcoming Knowledge Gaps in Communicating, and Dealing with Socio-cultural Contexts and Identities) more frequently than those of the other academic majors, with *p* value of from 0.000 to 0.049<0.05. It can be seen clearly from the results that students of Medicine reported using most of the strategies (15 strategies) less frequently than the others. The most common strategies students of Medicine used less frequently than other students were Using the Senses to Understand and Remember, Reasoning, Interacting to Learn and Communicate, Overcoming Knowledge Gaps in Communicating. Besides, students majoring in SSH showed higher level in the use of some strategies, such as Paying Attention, Obtaining and Using Resources, Orchestrating, Using the Senses to Understand and Remember, Activating Knowledge, Conceptualizing with Details, and Conceptualizing Broadly.

IV.   DISCUSSIONS

The results of overall use of reading strategies show that students of different academic majors used reading strategies at different levels of frequency. Students majoring in Finance-Banking reported using the overall strategies at the highest level (M=3.01), followed by students of SSH, Administrating, Accounting, and Technology. Students majoring in Medicine showed the lowest level of frequency (M=2.61).

Considering the use of each strategy category, the significant differences were found in the use of three categories- Cognitive, Affective, and Sociocultural, of which Cognitive category showed the greatest differences in the use by the students (the highest M=3.34 for Finance-Banking versus the lowest M=2.80 for Medicine). Students majoring in Finance-Banking reported using these strategy categories at the highest level of frequency while Medicine participants showed the lowest frequency level. Metastrategies was the only one category receiving no significant differences in the use among participants of different academic majors. If the Finance-Banking participants still kept the first rank among those of other majors, Medicine students reported the second

most users of this category (M=2.78 for Finance-Banking and M=2.77 for Medicine; the lowest M=2.52 for Technology).

In addition, the results show that students majoring in Finance-Banking used ten strategies much more than students of other academic majors. In contrast, Medicine students reported using individual strategies much less frequently than participants of the other academic majors. Moreover, those strategies, such as Using the Senses to Understand and Remember, Reasoning, Interacting to Learn and Communicate, Overcoming Knowledge Gaps in Communicating, were thought good ones for effective reading comprehension. An explanation for this might be that students majoring in Finance-Banking were more motivated and interested in using reading strategies to gain comprehension success. One more reason might be because of their reading proficiency. 53.3% students majoring in Finance-Banking rated themselves from fair to very good proficient in English reading, while this rate was much lower for students of other academic majors (from 14.6% to 43.5%). Especially, the lowest rate of 14.6% was for students of Medicine. This is in line with Sheorey and Mokhtari's (2001) argument that an awareness of reading strategies and comprehension monitoring is an important characteristic of good readers. Jobs after graduation might be one more explanation for this result. Students of other majors, except for Medicine have a four-year university course, and this is six years for Medicine students. Because of long time study at university and special characteristics of students majoring in Medicine, all or most of the students prefer working in hospitals or somewhere like that, which requires hardly English proficiency from students after their university graduation. Meanwhile students of other majors have shorter university course and it is not very important for them to get a job as intended when entering university. These students even are eager in having a job with foreign factors, which require English proficiency from all candidates. This motivates them a lot in learning English well as the goal of language learning plays a major role in the selection of language learning strategies (Oxford & Nyikos, 1989). Accordingly, the academic majors relate to the way the participants choose a certain category of reading strategies as well as the way they employ a certain individual strategy in their English reading.

Various research studies have explored the relationship between participants' field of study and their reading strategy use (Ehrman & Oxford, 2003; Harish, 2014; Lonka, & Lindblom-Ylänne, 1996; Mochizuki, 1999; Oxford & Nyikos, 1989; Park, 2010; Peacock, 2001; Shikano, 2013, etc.). Some studies reveal that reading strategies that EFL learners utilize while reading general passages are subject to change for learners from different academic fields of study (Eley, 1992; Harish, 2014; Oxford & Nyikos, 1989; Peacock, 2001; Peacock & Ho, 2003). The results of this study seem to support those of some other studies when they proved that academic majors made highly significant differences in using learning strategies (Harish, 2014; Oxford & Nyikos, 1989). For example, in their studies Park (2010), Oxford and Nyikos (1989) identified that L2 learners majoring in technical fields, such as engineering, computer science used reading strategies less frequently than those of other academic majors, such as business, humanities/social science/education.

However, the results of this study contradict to Park's (2010), Saadinam's (2004) and Shikano's (2013) studies which indicate that no significant differences among academic major groups were found in the use of reading strategy categories. According to Oxford and Nyikos (1989), the contrastive result in the relationship between the participants' use of reading strategies and their academic majors might be attributed to the cultural difference and the academic level of the participants. In this study, the explanation for the contrastive result might be because of the cultural differences between students of Vietnam and those of other countries.

V.   CONCLUSIONS

This study aims to examine whether there are significant differences in reading strategy usage among university students of different academic majors. The results of the study reveals that students' future careers affect their frequency of reading strategy use. Finance-Banking students reported the highest overall use of reading strategies, while Medicine students showed the lowest. Significant differences were found in the use of Cognitive, Affective, and Sociocultural strategies, with the largest differences in Cognitive strategies. However, no significant differences were found in the use of Metastrategies. Regarding the use of individual strategies Finance-Banking students used ten strategies more frequently than others, while Medicine students used them the least. The study supports findings from other research that academic majors influence reading strategy use, although it contrasts with some studies that found no significant differences. Cultural differences, particularly between Vietnamese students and those from other countries, might explain the varying results.

The research results can contribute to improving the English reading efficiency of university students by suggesting that program developers design English reading lessons that are more suitable for students of different majors.

Additionally, the findings of this study can guide educational administrators in Vietnamese universities in developing English language programs that encourage the use of reading strategies by all students. By promoting reading strategy usage and offering suitable support and resources, universities can help students

despite their different academic majors become more proficient readers, enhancing their academic performance and success in future careers.

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