

Original Research Article

The Use of Reading Strategies in Predicting Reading Comprehension: A Case Study of EFL University Saudi Students

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ABSTRACT

The study probed the correlation between reading strategies (i.e., Cognitive and Metacognitive) and reading comprehension of Saudi intermediate EFL university students. For this goal, 41 intermediate EFL learners in the Preparatory Year Deanship at Prince Sattam Bin Abdulaziz University were selected to complete reliable and valid Reading Strategies Questionnaire and Standardized Reading Comprehension Test. The results of Pearson Correlations and Hierarchical Multiple Regression Analysis revealed that metacognitive strategies had a higher relationship with reading comprehension scores ($r = 0.126$, $p < .01$). In addition, metacognitive strategies proved to be a more powerful predictor of reading comprehension scores ($R^2 = 0.04$). Full use of reading strategies was not guaranteed for getting a high score in academic reading comprehension tests.

Introduction

Consensually, comprehension is an important component beside accuracy and fluency in the reading process. Sweet and Snow (2002) stated that the readers' aim is to extract and construct what the text talks about or means. Thus, reading comprehension was conceptualized as a cognitive process in which any reader requires an ability to interact his/her experience and prior knowledge with the information of the text. Actually, this importance of comprehension in reading opened appetite of research to scrutinize its nature and its variables. According to Deville (2011), reading comprehension was elucidated in different ways; reading was viewed as a construct composed of many parts (Haynes, 2010); or examining the readers' behaviors is another way to make the nature of reading comprehension clear; or/and depicting the levels of representations is the third way to outline reading comprehension. This study is a scientific contribution to the previous papers that interested in the reading comprehension. Readers' responses as mirrors of different representations while they are dealing with an academic text were greatly considered in the current study to depict reading comprehension.

In extracting the meaning of a text, investigators stated that any reader uses different specific, deliberate, goal-directed actions (Pereira-Laird & Deane, 1997; Afflerbach, Pearson & Paris, 2008). To comprehend a text, readers differently utilize many reading strategies in a conscious or unconscious way. Based on the processing type, researchers allocated reading strategies in cognitive, metacognitive, and effective strategies (O'Malley & Chamot, 1990; Rebecca, 1990). The belief is that cognitive strategies such as 'guessing, writing notes, using dictionaries, using prior knowledge, highlighting and underlining...etc.' connect directly to the text and make comprehension easier. Cognitive strategies have a direct effect on reading performance. On the other hand, metacognitive

strategies such as ‘planning, monitoring, regulating, questioning, and reflecting’ have a direct effect on cognitive strategies (Anderson, 2005).

The importance of reading strategies was confirmed by the results of various empirical studies. Several investigations stated the important correlation between the awareness and use of reading strategies and reading comprehension. For instance, Mistar, Zuhairi and Yati (2016) aimed at exploring the effect of reading strategies on reading comprehension. They found that those participants who received training on reading strategies did better in literal and inferential reading comprehension tests than the participants who did not receive any training. Grasping comprehension from given texts related significantly to the use of reading strategies. In addition, empirical investigations recorded differences between poor and good readers in terms of using reading strategies. Anastasiou and Griva (2009) found that good readers were more aware of the cognitive strategies than poor readers. Poor readers retrospected a few metacognitive strategies; moreover, the results confirmed the important contribution of cognitive and metacognitive in reading comprehension.

Various researchers (Gashaye & Alem, 2018; Najadat & Azmi, 2018; Dhanapal, 2019; Telaumbanua, 2019; Mahdavirad & Mokhtari, 2019; Kulo, Kibui, & Odundo, 2020; Telaumbanua, Yulastri & Damaiyanti, 2020) have examined the reading comprehension skill in different context, but little attention so far has been paid to investigate the basic reading strategies which predict the reading comprehension scores of Saudi intermediate EFL university students.

Both understanding the nature of comprehension, specifically reading comprehension and the importance of reading strategies were formed the ground of the current study. In fact, the results of this empirical research contributed to grasping the process of comprehending a text. As well as, the study played a role in enrichment the findings of other studies towards the correlation between awareness of reading strategies and the extent of reading comprehension. Collecting data from Arabic readers of English texts granted this study an additional significance. Little scrutinized the issue depending on the responses of Arabic native speakers in reading English academic texts especially at the university level. As a summary, the study attempted empirically to determine the contribution of reading strategies usage and awareness in the scores of comprehending English texts completed by intermediate- EFL proficiency students at Prince Sattam Bin Abdulaziz University.

Literature Review

To report the strategies that are used in ESP contexts, Martinez (2008) administered the MARSI Questionnaire to 157 University Spanish students to explore the reading strategies they realize. The analysis of data revealed three results: First, the participants’ use of reading strategies while reading academic texts was moderate to high use. Second, problem – solving strategies such as rereading the difficult parts of a text were used more than global reading strategies such as using context clues followed by support reading strategies such as using reference materials. And third, Spanish ESP female students used ‘taking note strategy, summarizing strategy, and underlining or circling strategy’ more than Spanish ESP male students.

Daftardifard and Birjandi (2015) conducted a study to examine EFL lower intermediate learners’ performance either good or bad in relation to the FCER test and the metacognitive strategies learners used in taking the test. 144 EFL learners completed three tests; the Oxford Placement Test, the reading section of the FCE test and Reading Strategies Questionnaire. The results showed that metacognitive strategies such as planning and monitoring but not cognitive strategies had a significant correlation to the FCE test. Moreover, it was found that planning metacognitive strategies predicted the learners’ performance in the FCE test. Based on the statistical analysis, there were significant differences between good and poor readers in their scores in the reading section

and also in their scores in planning and monitoring metacognitive strategies. On conclusion, only metacognitive strategies had a positive ability to predict the learners' level of performance in the FCER test.

To understand the attitudes towards teaching reading strategies in Saudi Arabia, Alsamadani (2012) administered a standardized attitude questionnaire to 60 male Saudi EFL teachers. The descriptive analysis of subjects' responses revealed that Saudi EFL teachers positively viewed the reading strategy instruction. In addition, the study sought to explore the reality of practicing reading strategies. The researcher visited the classrooms and checked how often the teachers taught the reading strategies based on the items of the used questionnaire in the study. And then he interviewed 4 Saudi EFL teachers to explore their knowledge about reading strategies. The results revealed that Saudi EFL teachers focused more on cognitive strategies such as skimming, scanning, and questing. On the other hand, they were not enough aware of the importance of metacognitive reading strategies. Moreover, the study indicated that teachers' qualifications did not significantly affect their attitudes towards practicing reading strategies in EFL classrooms.

Alsheikh and Mokhtari (2011) conducted a study to identify whether or not a difference in using the reading strategies that were used by advanced 90 Arabic native-speaking readers when reading in their L1 and English. The level of awareness and actual use of reading strategies were the same either reading texts in Arabic or English languages. The analysis of the questionnaire showed that the level of the awareness of reading strategies was high, while the level of moderate to high was represented the actual use of these strategies. In addition, the analysis revealed that the participants used reading strategies higher when reading in English than when reading in their L1. The participants used respectively the problem-solving strategies, the Global Reading Strategies, and the Support Reading Strategies. Analyzing data perceived by aloud-thinking protocol indicated that participants used eight Problem Solving Strategies, seven Global Reading Strategies, and three Support Reading Strategies when they read in English. On the other side, the participants used four Problem Solving Strategies, three Global Reading Strategies, and two Support Reading Strategies when they read in Arabic. Thus, Arabic readers depend on reading strategies when reading in L2 more than that when reading in their L1.

This study added to the results of the previous literature by contributing two methodological considerations: firstly, the current study examined Arabic intermediate-EFL proficiency university students who were students at Prince Sattam Bin Abdulaziz University. It is important to scrutinize the issue –the correlation between reading strategies and reading comprehension- in considering different linguistic backgrounds of the participants. Thus, more studies investigating the impact of Arabic readers' usage of reading strategies on the extracting meaning of English passages were necessarily required. Secondly, the study sought to identify an exact statistical contribution of reading strategies for reading comprehension scores. The basis focus in this empirical paper was on identifying the prediction ability which was not conclusive till now; in which the query was whether the correlation between the independent variables and the dependent variable simple and linear as well as the predicted percentage of reading strategies using in reading comprehension scores.

Research Questions

The current study seeks to find answers to the following questions:

1. To what extent is the University Saudi EFL students' reported use of Cognitive and Metacognitive Reading Strategies associated with reading comprehension?
2. To what extent do Cognitive and Metacognitive strategies predict the EFL Saudi students' performance in the Reading Comprehension Test?

Method

Participants

The population of this study consisted of all students who were accepted in the Preparatory Year at Prince Sattam Bin Abdulaziz University 2018-2019. Those students studied different subjects such as basic EFL reading, writing, listening and speaking skills in addition to Maths, Science and Communication Skills in the Preparatory Year. Specifically, the instruments of this study were completed by forty-one male Saudi EFL Intermediate-level students. Selection the participants were depended on the strategy of the Preparatory Year Deanship in distributing new students. In which, the department of English language administered the new students a standardized placement test and then they were allotted in different sections and groups based on their scores and levels. Based on the previous strategy, the students whom were allotted in 11 and 12 sections represented intermediate EFL classes. Thus, the students in these two sections were selected to participate in this study. They all completed the secondary stage in private or governmental schools so their age was almost 18 years old. The subjects were similar in different aspects. All of them were Saudi students who lived in the Riyadh region; their native language was Arabic and studied English for more than six years in schools.

Instrument(s)

Questionnaire

The study perceived students' use of cognitive and metacognitive reading strategies by adopting Phakiti's cognitive and metacognitive Questionnaire (2006). This 5-point Likert scale includes 30 cognitive and metacognitive strategies. The questionnaire is reliable in which it yielded (0.88). The distribution of the items was normal as well as the skewness and kurtosis of variables were acceptable. The required time to complete the questionnaire was 10-15 minutes. The items of cognitive and metacognitive strategies were grouped as the following:

Cognitive strategies are divided into three groups: firstly, Comprehending Strategies included 2, 3, 6, 7, and 14 items. Secondly, Memory Strategies involved 1, 5, 8, and 22 items. Thirdly, Retrieval Strategies was examined by 4, 9, 26, and 29 items. Metacognitive strategies were also divided into three groups: first, Planning Strategies were perceived by 10, 11, 19, 20, 23, and 27 items. Second, Monitoring strategies were measured by 12, 16, 17, 21, 24, and 25 items. Third, evaluating strategies were represented in 13, 15, 18, 28, and 30 items (See Appendix A: Cognitive and Metacognitive Strategies Questionnaire).

Reading Comprehension Test

The second instrument in this study 'Reading Comprehension Test' was taken from the TOEFL test. It is well-known that the TEFOL test as a standardized test for students has been used a lot throughout the time which showed reliability and validity, according to Pierce (1994). The Reading Comprehension Test had two passages; the former was about rainforests followed by seven multiple choice reading questions. And the latter was about human memory also followed by seven multiple-choice reading questions. The total score was for this test was 14 points maximum. (See Appendix B: Reading Comprehension Test)

Data Collection Procedures

The participants completed the two previous instruments 'Cognitive and Metacognitive Strategies Questionnaire and Reading Comprehension Test' in one session. They answered the 14 comprehension reading questions then immediately checked the 5-point Likert questionnaire. The participants immediately recalled the strategies that they used when reading the two passages in the Reading Comprehension Test which reduced the possibility of depending on inferences.

Data analysis

This study aimed at exploring the contribution of using reading strategies on reading comprehension in English passages. And also, it explored the independent contribution of cognitive strategies and metacognitive strategies on reading comprehension. The correlation between cognitive and metacognitive was high. The study performed two multiple regression analyses of SPSS software. In which, cognitive strategies and metacognitive strategies were computed separately to explain the variance in reading comprehension.

Results

Cronbach's alpha on SPSS software was firstly conducted to examine the internal consistency and the reliability of the questionnaire. The result for the overall questionnaire (30 items) was at 0.642, which indicated to an acceptable level of reliability. Next, the Principal Components Analysis (PCA) was run to identify the factors to extract of the 30 items of the Reading Strategies Questionnaire. It was found that the Cognitive Reading Strategies explained 74.282% of the variance and the Metacognitive Reading Strategies explained 25.718% of the variance. Below, Scree Plot shows the coefficient.

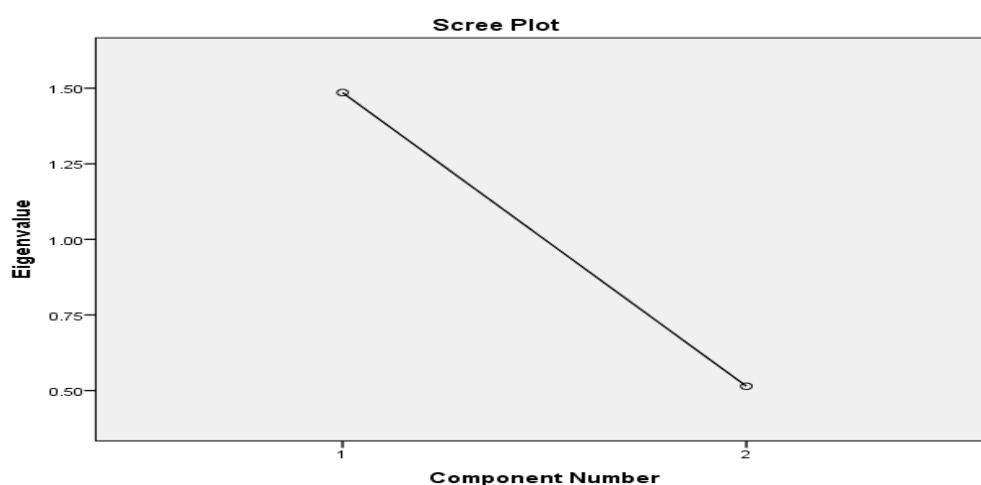


Figure 1: Scree Plot of the Reading Strategies Questionnaire Scale

Then, the descriptive statistics for the two types of the reading strategies was found by determining the mean scores and standard deviations as illustrated below. Actually, the analysis was used these aggregate scores to answer the research questions.

Table 1 : Descriptive Statistics of Reading Strategies Types

Variables	M	SD
Cog	45.5122	8.3997
Met	56.7805	10.55110

In figure 2, the differences between the obtained and predicted dependents variable scores (Reading Comprehension Scores) were normal concentrated mostly along the horizontal line $y = 0$. And, figure 3 below supported the linearity assumption in which the relationship between the residuals and the predicted variable scores was a straight line from left bottom to right top.



Figure 2: Scatterplot of Regression Standardized Predicted Values against Regression Standardized Residuals (Reading Strategies Types).

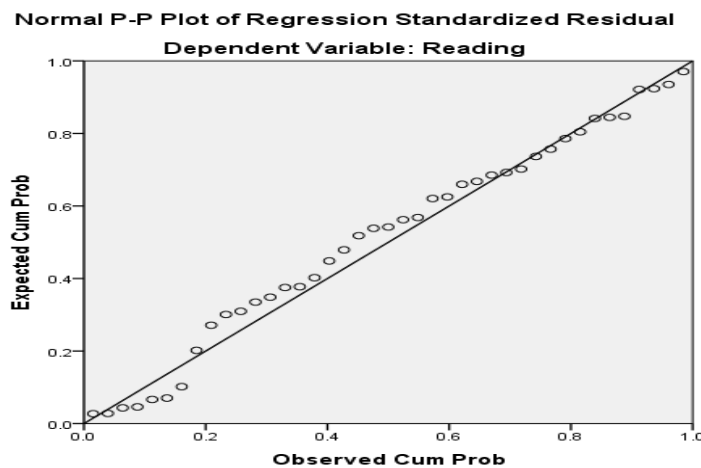


Figure 3: Normal P-P Plot

First Research Question

The first question in this study was “To what extent is the University Saudi EFL students’ reported use of Cognitive and Metacognitive Reading Strategies associated with reading comprehension?” To answer this question, two indexes were established; the former was the aggregate of all participants’ responses on the cognitive items and the latter was the total of all participants’ responses on the metacognitive items. Then these two aggregates were analyzed in relation to the subjects’ scores in the reading comprehension test by 2-tailed Pearson Correlation Coefficient on SPSS software. Below, Table 2 indicates the results of Pearson correlation among the three variables; Cognitive Strategies, Metacognitive strategies, and Reading Comprehension.

Table 2. Pearson Correlation

Variables	R. Comp	Sig
Cog	- 0.082	0.306
Met	0.126	0.215

Note. The result is significant at $p < .01$ (two tailed).
 Cog = Cognitive Strategies, Met = Metacognitive Strategies
 R. Comp = Reading Comprehension, and Sig = Significance

According to Table 2, the results revealed a negative association between the use of cognitive strategies with the reading comprehension test ($r = -0.082$), whereas the use of metacognitive strategies had a positive association with the reading comprehension test ($r = 0.126$). On the other hand, the correlation between both reading strategies Cognitive and Metacognitive was significant estimated ($r = 0.486$). Furthermore, there was not a significant correlation between both cognitive strategies ($\text{Sig} = .306$, $p < .01$) and metacognitive strategies ($\text{Sig} = .215$, $p < .01$) with reading comprehension. However, the correlation showed that metacognitive strategies more significant than cognitive strategies in relation to reading comprehension. In addition, the **means and standard deviations** of using cognitive and metacognitive strategies as illustrated in Table (1) indicated generally that the participants use more metacognitive strategies than cognitive strategies. Obviously, the results of **paired-sample t-test** showed a significant difference between cognitive strategies and metacognitive strategies $t = -7.372$, $p = 0.000$. Specifically, EFL Saudi students used metacognitive strategies more than cognitive strategies.

Second Research Question

The second question was "To what extent do Cognitive and Metacognitive strategies predict the EFL Saudi students' performance in the Reading Comprehension Test?" This question sought to determine whether cognitive or metacognitive strategies have the ability to predict the participants' level of comprehension. It is important to confirm here that the two types of reading strategies cognitive and metacognitive were the independent variables (predictors) while reading comprehension score represented the dependent variables. To analyze the regressions among the variables, the current study used the Hierarchical Multiple Regression on SPSS software that revealed the results of the analysis as shown in Table (3) below.

Table 3. Hierarchical Multiple Regression Summary

Model	R	R ²	Adj.R	R ² Change	F Change	df1	df2	Sig. F Change
Cog	0.082	.007	-.019	.007	0.263	1	39	0.611
Met	0.207	.043	-.008	.036	1.434	1	38	0.239

Cognitive strategies revealed statistically positive ($F(1,39) = 0.263$, $p = 0.611$ (<0.05); $R(\text{square}) = 0.007$, Adjusted $R(\text{square}) = -0.019$). The value of the multiple correlation (R) was 0.082 expressing how well cognitive strategies with reading comprehension score. The value of $R(\text{square}) = 0.007$ means that cognitive strategies accounted 0.01% of the variance in the reading comprehension score (The dependent factor).

Moreover, Metacognitive Strategies also represented statistically positive ($F(1,38) = 1.434$, $p = 0.239$ (<0.05); $R = 0.207$, $R(\text{square}) = 0.043$, Adjusted $R = -0.008$). The $R(\text{square})$ was 0.043 which means metacognitive strategies accounted (0.04%) of the variance in the dependent factor. And both cognitive and metacognitive strategies accounted (0.05%) of the variance in the reading comprehension score. As a result, Cognitive and metacognitive strategies were positive predictors of participants' level of reading comprehension. However, metacognitive strategies had performed over cognitive strategies in predicting the performance in the reading comprehension test.

Discussion and Conclusion

The primary interest of the current paper oriented to investigate the basic reading strategies which predict the reading comprehension scores. The results confirmed Phakiti's (2003) and Daftarifard and Birjandi's (2015) studies which revealed that the relationship between metacognitive strategies and reading comprehension scores was positive even though the correlation was not high. The negative association between cognitive strategies and reading comprehension in this study supported Caldwell and Leslie's (2010) finding which showed that improper use of cognitive strategies could be made by low proficient students. As well as, the reading comprehension test

was taken from TOFEL tests which addressed upper intermediate while the participants were all intermediate students. Furthermore, the analysis of 41 intermediate EFL Saudi students' responses found that metacognitive strategies were positive predictor of the performance in reading tests. Metacognitive strategies alone accounted 4% of the variance in the reading comprehension while cognitive strategies accounted only 1% of the variance. This percentage confirmed again that metacognitive strategies were the basic strategies to predict the level of performance in the reading tests. On the other hand, this modest percentage of reading strategies as a whole in relation to reading comprehension strengthened Shaikah' s (2005) conclusion which considered using reading strategies does not mean a high performance in the reading comprehension test. Thus, there were other factors that affected the scores of the reading comprehension test more than the use of reading strategies. More studies are necessarily required to understand the effect of using cognitive and metacognitive strategies on the performance in the reading comprehension tests. The studies become more useful when large sample in different linguistic background through time were involved to the results. Instructors of reading comprehension should focus on train their students to use reading strategies especially metacognitive strategies which help them to better in comprehending texts.

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Appendix B: Reading Comprehension Test

Directions: In this section, you will read two passages. Each passage is followed by a number of questions about it. Choose the best answer: (A), (B), (C), or (D).

Answer all questions about the information in a passage on the basis of what is stated or implied in that passage.

Passage 1

Rainforests circle the globe for twenty degrees of latitude on both sides of the equator. In that relatively narrow band of the planet, more than half of all the species of plants and animals in the world make their home. Several hundred different varieties of trees may grow in a single acre, and just one of those trees may be the habitat for more than ten thousand kinds of spiders, ants, and other insects. More species of amphibians, birds, insects, mammals, and reptiles live in rainforests than anywhere else on earth. Unfortunately, half of the world's rainforests have already been destroyed. Scientists estimate that as many as fifty million acres are destroyed annually. In other words, every sixty seconds, one hundred acres of rainforests is being cleared. By the time you finish reading this passage, two hundred acres will have been destroyed! When this happens, constant rains erode the former forest floor, the thin layer of soil no longer supports plant life, and the ecology of the region is altered forever. Thousands of species of plants and animals are condemned to extinction and, since we aren't able to predict the ramifications of this loss to a delicate global ecology, we don't know what we may be doing to the future of the human species as well.

1. The word “relatively” in line 2 could best be replaced by
 - (A) Temporarily
 - (B) Typically
 - (C) Comparatively
 - (D) Extremely
2. According to the passage, more than half of all species of plants and animals
 - (A) Live in twenty rainforests.
 - (B) Live in several hundred different varieties of trees.
 - (C) Live in areas where rainforest has been cleared.
 - (D) Live in a forty-degree band of latitude.
3. What is the current rate of destruction?
 - (A) One acre per minute.
 - (B) One acre per second.
 - (C) One hundred acres per minute
 - (D) Two hundred acres per hour.
4. What is the meaning of the word “just” in line 4?
 - (A) Fairly
 - (B) Only
 - (C) Correctly
 - (D) Precisely
5. What will NOT happen if the rainforest continues to be cleared?
 - (A) The land will be eroded by the rains.
 - (B) Many species of plants and animals that depend on the rainforest will become extinct.
 - (C) The future of the human species may be changed.
 - (D) The rainforest will grow, but at a much slower rate.
6. The word “altered” in line 13 is closet in meaning to
 - (A) Changed
 - (B) Terminated
 - (C) Harmed

(D) Invaded

7. The word "this" in line 11 refers to

(A) The destruction of the acres.

(B) The reading of the passage.

(C) The erosion of the forest floor

(D) The constant rain.

Passage 2

Human memory, formerly believed to be rather inefficient, is really more sophisticated than that of a computer. Researchers approaching the problem from a variety of points of view have all concluded that there is a great deal more stored in our minds than has been generally supposed. Dr. Wilder Penfield, a Canadian neurosurgeon, proved that by stimulating their brains electrically, he could elicit the total recall of specific events in his subjects' lives. Even dreams and other minor events supposedly forgotten for many years suddenly emerged in detail.

The memory trace is the term for whatever is the internal representation of the specific information about the event stored in the memory. Assumed to have been made by structural changes in the brain, the memory trace is not subject to direct observation but is rather a theoretical construct that we use to speculate about how information presented at a particular time can cause performance at a later time. Most theories include the strength of the memory trace as a variable in the degree of learning, retention, and retrieval possible for a memory. One theory is that the fantastic capacity for storage in the brain is the result of an almost unlimited combination of interconnections between brain cells, stimulated by patterns of activity. Repeated references to the same information support recall. To say that another way, improved performance is the result of strengthening the chemical bonds in the memory.

1. With what topic is the passage mainly concerned?

(A) Wilder Penfield

(B) Neurosurgery

(C) Human memory

(D) Chemical reactions

2. The word “formerly” in line1 could best be replaced by
- (A) In the past
 - (B) From time to time
 - (C) In general
 - (D) By chance
3. Compared with a computer, human memory is
- (A) More complex
 - (B) More limited
 - (C) Less dependable
 - (D) Less durable
4. The word “that” in line 2 refers to
- (A) The computer
 - (B) The efficiency
 - (C) The sophistication
 - (D) The memory
5. According to the passage, researchers have concluded that
- (A) The mind has a much greater capacity for memory than was previously believed.
 - (B) The physical basis for memory is clear.
 - (C) Different points of view are valuable.
 - (D) Human memory is inefficient.
6. According to the passage, the capacity for storage in the brain
- (A) Can be understood by examining the physiology.
 - (B) Is stimulated by patterns of activity.
 - (C) Has a limited combination of relationships.
 - (D) Is not influenced by repetition.
7. All of the following are true of a memory trace EXCEPT that
- (A) It is probably made by structural changes in the brain.
 - (B) It is able to be observed.
 - (C) It is a theoretical construct.
 - (D) It is related to the degree of recall.

APPENDIX B: MODEL ANSWERS

Passage 1

1. C

2. D

3. C

4. B

5. D

6. A

7. A

Passage 2

1. C

2. A

3. A

4. D

5. A

6. B

7. B