The Effects of Using the Reading Thinking Activity Model (RTAM) on Reading Comprehension: A Case Study of the Preparatory Year Students at IMISU, Saudi Arabia

Dr. Majed Alharbi
King Saud University
College of Languages and Translation

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Abstract:

This study addressed the effects of the Reading, Thinking, Activity Model (RTAM) on English language reading comprehension among 105 Saudi students studying English as a foreign language in the Preparatory Year Program at Al Imam Mohammed Ibn Saud Islamic University (IMISU). Two levels of comprehension were considered, literal comprehension relating to explicit information intended to be presented by an author, and inferential comprehension relating to implicit and indirect information derived from analysis and interpretation of what was written. The effects were examined for students with Deep Processing and Elaborative learning styles to consider the effects on literal and inferential comprehension for students with these differing learning styles. The findings indicated that the RTAM positively affected reading comprehension when compared with traditional language teaching methodology and there were significant differences for literal and inferential comprehension, and for students with deep or elaborative learning styles. For students with deep learning style there was no significant difference in literal comprehension but the RTAM method led to improvement in inferential comprehension. For students with elaborative learning style there was significant improvement in both literal and inferential comprehension. The greatest impact of the RTAM method was for inferential comprehension for students with elaborative learning style.

أثر استخدام نموذج نشاط القراءة الفكري على مهارة استيعاب المقروء: دراسة حالة لطلاب السنة التحضيرية بجامعة الإمام محمد بن سعود الإسلامية

د. ماجدالحربي

كلية اللغات والترجمة– جامعة الملك سعود

الملخص:

تقصت هذه الدراسة أثر استخدام نموذج نشاط القراءة الفكري (RTAM) على مهارة استيعاب المقروء في اللغة الإنجليزية لدى ١٠٥ طالب من الطلاب السعوديين الذين يدرسون اللغة الإنجليزية كلغة أجنبية في السنة التحضيرية بجامعة الإمام محمد بن سعود الإسلامية. واعتمدت الدراسة مستويين من مستويات الاستيعاب وهي: مستوى الاستيعاب الحرفي المتعلق بالمعلومات المباشرة التي يقصدها المؤلف، ومستوى الاستيعاب الاستنتاجي المتعلق بالمعلومات الضمنية غير المباشرة والمستمدة من تحليل وتفسير المكتوب. حيث دُرس أثر هذا النموذج على الطلاب ذوي أسلوب التعلم بالمعالجة العميقة، والطلاب ذوي أسلوب التعلم بالمعالجة التفصيلية، مع الأخذ بعين الاعتبار أثر ذلك على مستويي الاستيعاب الحرفي والاستنتاجي لدى الطلاب ذوي أساليب التعلم المختلفة. وأظهرت النتائج أن نموذج نشاط القراءة الفكري قد أثّر إيجابياً على مهارة الاستيعاب المقروء مقارنةً بالأسلوب التقليدي لتدريس اللغة، حيث يوجد فروق دالة إحصائياً في مستويي الاستيعاب الحرفي والاستنتاجي لدى الطلاب ذوي أسلوب التعلم بالمعالجة العميقة والطلاب ذوي أسلوب التعلم بالمعالجة التفصيلية، بينما لا توجد فروق دالة إحصائياً لدى الطلاب ذوي أسلوب التعلم بالمعالجة العميقة في مستوى الاستيعاب الحرفي، إلا أن نموذج نشاط القراءة الفكري قد ساهم في تحسين مستوى الاستيعاب الاستنتاجي لديهم. أما فيما يتعلق بالطلاب ذوي أسلوب التعلم بالمعالجة التفصيلية، فقد كان هناك تقدم واضح في مستوى كلٍ من الاستيعاب الحرفي والاستنتاجي لديهم، مما يدل على أن لاستخدام هذا النموذج أثر كبير على مهارة الاستيعاب الاستنتاجي لدى الطلاب ذوي أسلوب التعلم بالمعالجة التفصيلية.

INTRODUCTION

Preparatory year studies at Al Imam Mohammed Ibn Saud Islamic University (IMSIU) are designed to provide students with the skills and abilities needed for successful completion of their university program. Preparation in English is particularly important for students entering programs that will be taught in this language, with reading comprehension being one of the most important skills that they will need.

There is an extensive body of literature dealing with processes involved in effective reading for comprehension. However teaching methodology does not always comply with the conclusions of that research. This study investigates the effects on reading comprehension of the Reading Thinking Activity Model (RTAM) compared with results of traditional modes of teaching. The investigation compares the results for direct and inferential learning for students with different learning styles.

LITERATURE REVIEW

Research conducted over the past 25 years has contributed different beliefs about reading processes and has led to new theories about what is involved and how comprehension can be enhanced.

Reading comprehension is not fundamentally different from other kinds of comprehension. The mental tasks involved are common to other human cognitive activity. Comprehension of any kind depends on interaction with what we already know, which is embedded in cognitive structure (Alderson, 2000; Santa, 2000). To understand new information from a page of script, we must interpret it through relationships with our existing cognitive

structure. Comprehension crucially depends on that individual's having acquired a body of information on the subject dealt with in the new information—that is, an adequate amount of background information (Santa, 2000: 4–5).

Comprehension is the main goal of the reading process. For comprehension to be constructive, active, and of value, it must involve interaction between reader and text (Allen, 2003; Stuaffer, 1969). Readers should become aware of themselves as readers, including their reading skills and strategies, their assumptions about a text, their participation in the interaction between the text and themselves, and new information or ideas that they may never have considered before. Self-reflection is central to learning. It is a first step to individuals becoming more conscious and aware of themselves as readers and learners.

Comprehension is a process based on constructing meaning and requires active involvement as readers integrate and organize information from text and connect it with what they already know. Good readers can integrate and organize information, and have developed reading strategies to comprehend and learn, while poor readers may experience problems with prior knowledge or have difficulty with cognitive skills involved in integrating and organizing information. They may also lack knowledge about reading strategies or be unaware of techniques they could adopt to improve comprehension of new material.

Because the reading process is an individual process that takes place inside the reader's mind, moving it into the public arena of the classroom in order to monitor, analyze, discuss, and modify can be difficult. For this reason, public discussion about reading and study processes is being increasingly recognized as an important

activity in the reading classroom. Recent research indicates that readers' becoming more aware of what they do when they read and becoming conscious of their own reading processes is a powerful tool for improving reading efficiency (Tancock, 1994). To become better readers, students need to become aware of how they read and what they could do to improve their comprehension.

Reading comprehension models in which teachers and students collaborate in an active, on-going pursuit of meaning are effective. Traditional classroom practice in which students may read aloud or privately but without discussion of strategies for enhancing comprehension do not supply students with the necessary reading comprehension skills. However instructional models that explicitly present reading skills and strategies and involve students in some tasks where they practice these skills have generally been found to be beneficial to reading comprehension (Almanza, 1997; Richeck, 1987).

There is a further element that needs to be considered in arguing for explicit attention in classrooms to processes for deriving meaning and enhancing comprehension. The key to effective comprehension is establishing links between existing knowledge and new information. However there is extensive research on differences in cognitive style between learners and the process of developing linkages is likely to be affected by the different cognitive styles of different students. A preliminary step that teachers should undertake is to identify their students' learning styles and strategies and in classroom discussions these variations should be considered. This will help individual students to employ the most effective reading models for themselves.

Variations between students in cognitive style are expected to affect the level of understanding that they achieve and the extent to which they focus on explicit statements of specific information or inferences and interpretations that may or may not have been intended by a writer.

While these processes are interrelated and interactive, the immediate goal in reading and the processes exercised by the reader are likely to be affected by both the reader's cognitive style and by training in processes for studying text material.

An extensive body of research has been carried out by a number of researchers to identify learning styles and their impact on comprehension and learning, and to develop instruments that can be used to categorize the learning style of individual readers (eg. Schmeck et al (1977), Schmeck, (1982),Weinstein et al, (1988).

Following a review of the above material, this study has used the Inventory of Learning Processes Questionnaire (ILPQ) developed by Al-Hijawi (1998) to identify styles used by subjects in this study, classifying them as using Deep Processing or Elaborative Styles.

SIGNIFICANCE OF THE STUDY

The significance of the current study is twofold. First, the results should improve the effectiveness of instruction and students' capacity for reading comprehension. In addition, the study should assist the instructors in meeting their desire to find the most effective models for improving students reading comprehension. The findings on the use of the RTAM, and the experience in the use of those techniques are important for the teachers who took part

in this study and have important implications for other Saudi teachers who teach reading comprehension.

RESEARCH QUESTIONS

The problem addressed in this study was to investigate the effect of systematic instruction in RTAM for students with different learning styles at IMISU. The students were enrolled in classes for English as a Foreign Language (EFL) in the Preparatory Year. The effects of the teaching model were considered for all students and for those with Deep Processing and Elaborative learning styles, with consideration given to both literal and inferential reading comprehension. This was done to consider possible interactive effects for those with different learning styles for both direct and inferential learning.

The study addressed the following research questions:

1- Are there any statistically significant differences between EFL Saudi Preparatory Year students' literal and inferential reading comprehension achievements that can be attributed to the teaching strategies involved in RTAM compared with traditional EFL teaching methods?

2- Are there any statistically significant differences between EFL Saudi Preparatory Year students' literal and inferential reading comprehension achievements that can be accounted for by their learning styles, i.e. deep processing or elaborative processing?

3- Are there any statistically significant differences between EFL Saudi Preparatory Year students' literal and inferential reading comprehension attributable to interaction between the teaching method used and the students' learning styles?

DEFINITION OF TERMS

This study was centered around three basic terms:

1. Learning style is an information processing style classified into either a deep processing or an elaborative processing style. In the current study, each student is considered to be either a deep processor or an elaborative processor, depending on whether he scores higher on the deep processing or elaborative processing scale of the Inventory of Learning Processes Questionnaire.

2. Inferential Reading Comprehension Achievement refers to the understanding of the implicit and indirect information presented in English written texts, including recognizing cause-effect relationships, identifying implicit ideas, determining authors' purposes and themes, making predictions, and drawing conclusions. This ability is determined by the student's score in the inferential questions on the reading tests used in the study.

3. Literal Reading Comprehension Achievement is the understanding of the explicit information in English-written texts, such as the main ideas, secondary ideas, and supporting details (facts, examples, names, events, places, dates, and so forth). The student's score in the literal questions on the Reading Comprehension Achievement Test is considered to be an indicator of this achievement.

TEACHING STRATEGIES

Traditional Teaching Model

The control group in this study was exposed to common processes used by instructors in programs for English as a foreign language in which key terms are defined, the instructor and students read material and meaning is discussed. Major attention is

given to pronunciation and to translation, but there is little consideration of links between students existing knowledge and the new material.

Reading Thinking Activity Model (RTAM)

RTAM consists of a four-stage teaching procedure that teachers can adopt in teaching reading. This procedure has four specific instructional stages: identifying goals, monitoring the reader's adjustment of reading speed suitable for the material and the learners' purposes, diagnosing any difficulties to help students overcome them, and promoting understanding. Those stages pass through steps that specify the roles of both teachers and students (Oczkus, 2003; Campion, 1987; Stauffer, 1969; Bartlett, 1932). RTAM encourages readers to engage actively in a three-step comprehension cycle.

1. Sample the text.
2. Make predictions.
3. Sample the text to confirm or correct previous predictions.

Experimental Activity Period

Instructors for the experimental and control groups were thoroughly briefed on the teaching strategies used in the study. Following that briefing the experimental group was taught through the RTAM processes and the control group by the traditional processes for a period of one month before the comprehensive tests were carried out.

Detailed procedures used for the experimental group were followed to implement the

three step cycle for the RTAM strategy described above.

1. The teacher states the reading comprehensive objectives.

2. The teacher previews a selection from textbook and asks students to:

a. Read the selected reading passage title and headings.

b. Predict what their reading content will be about.

3. The teacher then records the students' predictions made from the reading title on the Smart Board and asks students to remember their predictions.

4. The teacher asks students to preview the reading passage through using headings, sub-headings, pictures, and bold words.

5. The teacher encourages students to prepare questions or predictions that they believe will be answered while reading. If the students are using this model for the first time the teacher will provide examples to assist in this task.

6. The teacher asks the students to find and read the paragraph from the passage that develops the concepts discovered in the questioning or prediction making activity.

7. The teacher discusses with the students their responses after reading the paragraph to the questions or predictions they had made.

8. The teacher continues the questioning/prediction making strategy with additional selected reading passages. As this is done the teacher encourages the students to interpret the information and support their inferential reading comprehension.

9. The teacher monitors the students' progress by holding small discussion groups that can be integrated throughout the lesson.

10. The teacher reviews the predictions and discussions with the students to make sure that they have an accurate understanding of the text.

RESEARCH METHODOLOGY

Population and Sample of the Study

The participants were 105 randomly selected EFL Saudi Preparatory Year students at IMISU in the academic year 2012–2013. The students were randomly divided into two groups: the experimental group, which was taught by the RTAM, and the control group, which was taught by the traditional method. Table (1) shows the distribution of the study sample classified in terms of the teaching method and learning style.

The second instrument of the test was the Inventory of Learning Processes Questionnaire (ILPQ) (Al-Hijawi, 1998). This instrument is concerned with the subjects' preferred learning styles.

The ILPQ consists of 32 items centered on two scales: (1) the deep-processing style; and (2) the elaborative-processing style. The first scale, the deep-processing style, involves 18 items (2, 5, 6, 7, 8, 11, 12, 15, 18, 20, 21, 23, 25, 26, 27, 28, 30, and 31) with Cronbach's Alpha reliability coefficient of 0.87. This scale is designed to measure elements of the students' learning styles, such as critical thinking, conceptual organization, and comparing information. The second scale, the elaborative processing scale, involves 14 items (1, 3, 4, 9, 10, 13, 14, 16, 17, 19, 22, 24, 29, and 32) with Cronbach's Alpha reliability coefficient of 0.82. This scale explores some of the students' preferred strategies, such as translating new information into their own terminology, eliciting concrete examples from their own experiences, applying new information to their own lives, and using visual images to grasp new ideas.

The study subjects were required to respond to each item of the ILPQ by choosing the answers from the four-point Likert scale:

(1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree). The negative items (2, 5, 7, 8, 12, 18, 21, 23, 25, 26, 28, and 31) of the ILPQ were given a reverse score. The score of the deep-processing scale or the elaborative-processing scale was the sum of the points on that scale. Thus, the minimum score on the deep-processing scale was 18, and the maximum score on the same scale was 72, whereas the minimum score on the elaborative-processing scale was 14, and the maximum score on the same scale was 56. Therefore, the study subjects' preferred learning styles were identified in light of their higher percentage score on any of the two scales of the ILPQ. Each sample group was subdivided into two equal sub groups according to the student's preferred learning style as indicated on the ILPQ. Any subject that gained equal scores on the deep-processing scale, and the elaborative-processing scale, was excluded from the study.

Table 1

The Distribution of the Sample of Students with Deep or Elaborative Learning Styles to be Taught Through Each Methodology.

Learning Style	Teaching Method		Total
	Traditional Method	RTAM	
Deep	25	25	50
Elaborative	28	27	55
Total	53	52	105

The Reading Test:

The reading test adopted for the study to assess reading comprehension consisted of a timed readings series, as validated and published by Spargo (1989).

The test involved two 400-word expository passages: "Cancer and Nutrition" and "Chocolate: Everyone's Favorite Sweet." Both reading texts were appropriate for the EFL Saudi Preparatory Year students and compatible with the required reading passages in their English curricula.

There were 10 questions asked about each of the two passages, five literal questions (1, 2, 3, 4, and 5) and five inferential questions (6, 7, 8, 9, and 10). Each question was assigned 5 points so that the two sets of five literal questions and the two sets of inferential questions gave a maximum score of 50 for each type of questions.

The reading texts and the questions used were evaluated by 9 experts in the fields of language instruction, measurement, and evaluation to judge their validity and appropriateness for the EFL Saudi Preparatory Year students as a measure of literal and inferential reading comprehension. Those experts endorsed the reading material and the questions as a valid measure of reading comprehension. A pilot study was conducted in which the test was given to a sample of 40 other EFL Saudi students in the Preparatory Year to identify how much time was required. For those students the time required was 50 minutes, and the Chronbach's alpha reliability coefficient applied to the pilot study test results according to the split-half method gave a result of 89 indicating appropriate validity and reliability of the test.

To administer the test students were asked to read each of the passages and then to answer the questions about that passage without referring back to the document. Consequently the test was a measure of recollection and comprehension following a single timed reading.

DATA ANALYSIS AND RESULTS

The data analysis involved comparisons of mean scores for the different groups with different learning styles and taught by different methodology. Assessment of statistical significance of differences found was undertaken through the Two-Way MANOVA statistical procedure to examine the influence of the RTAM and the learning style on the students' literal and inferential reading comprehension achievements.

The first research question was: "Are there any statistically significant differences among EFL Saudi Preparatory Year students' literal and inferential reading comprehension achievements that can be attributed to the teaching method used". To answer this question, the means and standard deviations for the experimental and control groups on the literal and inferential reading comprehension achievements post-test scores were calculated. Table 2 shows that the mean for the experimental group on the literal reading comprehension achievement was 35.86, with a standard deviation of 5.79, whereas the mean for the same group on the inferential reading comprehension achievement was 41, with a standard deviation of 6.94. On the other hand, the mean for the control group on the literal reading comprehension achievement was 32.83, with a standard deviation of 4.99, whereas the mean for

the same group on the inferential reading comprehension achievement was 27.38, with a standard deviation of 6.47.

Table 2

Mean Scores and Standard Deviations for Students Using RTAM Strategies or Traditional Reading Methodology on Literal or Inferential Questions

	RTAM		Traditional	
	Literal	Inferential	Literal	Inferential
Mean Score	35.86	41.0	32.83	27.38
Standard Deviation	5.79	6.94	4.99	6.47

These figures show relatively minor differences for the literal questions between the two groups but much more substantial differences for the inferential questions. The difference for the inferential questions was statistically significant both within the RTAM group and between that group and students taught by traditional methods.

The second research question was: "Are there any statistically significant differences between the students' literal and inferential reading comprehension achievements that can be accounted for by their learning styles? (deep processing or elaborative processing)? The answer to this question necessitated calculating the means and standard deviations of the scores of the deep- and elaborative-processing on the literal and inferential reading comprehension achievement tests. As shown in Table 3, the mean for the deep processors on the literal reading comprehension achievement was 34.98, with a standard deviation of 5.13; the mean for the same processors on the inferential reading comprehension achievement

was 30.52, with a standard deviation of 6.25. Furthermore, the mean for the elaborative processors on the literal reading comprehension achievement was 36.97, with a standard deviation of 6.35; however, the mean for the same processors on the inferential reading comprehension achievement was 37.33, with a standard deviation of 6.70.

Table 3

Mean Scores and Standard Deviations for Students with Deep Processing or Elaborative Learning Styles on Literal and Inferential Questions

Learning Style		Literal Questions	Inferential Questions
Deep Processing	Mean	34.98	30.52
	Standard Deviation	5.13	6.25
Elaborative	Mean	36.97	37.33
	Standard Deviation	6.35	6.70

These figures indicate that students with elaborative learning style performed significantly better than those with deep learning style on both literal and inferential questions. However, the difference for literal questions was relatively minor and was much more substantial for inferential questions.

The results of the two-way MANOVA indicate that there were statistically significant differences among the EFL Preparatory Year students' literal and inferential reading comprehension achievements.

The third question was: "Are there any statistically significant differences among the EFL Preparatory Year students' literal and

inferential reading comprehension achievements that can be attributed to the interaction between the teaching method and their learning styles?" The means and standard deviations were calculated for the interaction groups on the literal and inferential reading comprehension achievements post-test scores in order to answer this question. Table 4 shows the means and standard deviations as follows: the mean for the RTAM-deep processors group on the literal reading comprehension achievement was 31.97, with a standard deviation of 5.63; the mean for the same group on the inferential reading comprehension achievement was 35, with a standard deviation of 5.65. The mean for the RTAM–elaborative processors group on the literal reading comprehension achievement was 38.33, with a standard deviation of 3.09, and the mean for the same group on the inferential reading comprehension achievement was 45.22, with a standard deviation of 3.95. Along the same lines, the table presents the means and standard deviations of the literal and inferential reading comprehension achievements for the following two groups: Traditional Method—Deep Processors and Traditional Method—Elaborative Processors.

Table 4

The Means and Standard Deviations for the Literal and Inferential Reading Comprehension Achievements Post-Test Scores, According to the Teaching Method, Learning Style, and Their Interaction

Teaching Method			RTAM		Traditional Method		Total	
Variable			Literal	Inferential	Literal	Inferential	Literal	Inferential
Learning Style	Deep	Mean	31.97	35	32.95	24.31	34.98	30.52
		SD	5.63	5.65	3.52	5.64	5.13	6.25
	Elaborative	Mean	38.33	45.22	30.83	28.87	36.97	37.33
		SD	3.09	3.95	4.79	5.1	6.35	6.7
Total	Mean		35.86	41	32.83	27.38	34.02	33.9
	SD		5.79	6.94	4.99	6.47	5.4	6.66

This table shows a number of relationships between learning style and teaching methodology that could have important implications for strategies to enhance reading comprehension. The use of RTAM methodology appears to have no impact on literal questions for students with deep learning styles but a substantial effect on these questions for elaborative learners. However the most significant relationships are for inferential questions where there is a difference of 10.29 for deep learning style students and 16.35 between the mean scores of 45.22 on inferential questions for

elaborative style learners taught by RTAM compared with those with the same learning styles taught by traditional methodology.

A Two-Way MANOVA was carried out to investigate the significance of the difference between the experimental and control groups on the literal and inferential reading comprehension achievement post-test scores. The results of this test are represented in Table 5, and they indicate that there were statistically significant differences in these literal and inferential reading comprehension achievements. With the one exception noted above the differences were significantly in favor of the experimental group that was taught by the RTAM.

Table 5

Two-Way MANOVA for the Literal and Inferential Reading Comprehension Scores, According to the Teaching Method, Learning Style, and Their Interaction

Source	Multivariate Tests			
	Wilks	F		Sig.
Teaching Method	.36	94.3		.001
Learning Style	.68	24		.01
Interaction	.82	13.9		.01
Variable	Univariate Tests			
	Sum	Mean	F	Sig.
Literal	180.2	180.2	11.5	.004
Inferential	3966.8	3966.8	175.3	.001

Source	Multivariate Tests			
	Wilks	F		Sig.
Literal	92.34	92.34	5.93	.03
Inferential	947.4	947.4	42.8	.002
Literal	387.1	387.1	21.4	.002
Inferential	124.6	124.6	5.7	.031

The results of the two-way MANOVA are shown in Table 5 above, and they reveal statistically significant differences among the EFL Preparatory Year students' literal and inferential reading comprehension achievements that can be attributed to the interaction between the teaching method and the subjects' preferred learning styles. Similarly, these differences were significant in terms of both the literal reading comprehension achievement and the inferential reading comprehension achievement. The results also indicate that the literal and inferential reading comprehension achievements of the RTAM—Elaborative Processing group were higher than the corresponding results of the group that were taught in the traditional method. Likewise, the figures clearly reveal that the inferential reading comprehension achievement for the RTAM—Deep Processing group was higher than that of those using the traditional method; however, the opposite was true for the literal reading comprehension achievement, as it was slightly higher for the Traditional Method—Deep Processing group compared to the RTAM group. Finally, the literal and inferential reading comprehension achievements of the elaborative processors in the experimental and control groups were higher than those of the deep processors.

DISCUSSION

The findings of the study clearly illustrated that the RTAM does have a positive impact on the Preparatory Year students' literal and inferential reading comprehension achievements compared to the traditional method. Furthermore, the findings showed higher scores in the literal and inferential reading comprehension parts for the elaborative processing students than the deep processing students. The results demonstrated that the inferential reading comprehension achievement for the same group—the elaborative-processing students—was higher than their achievement in the literal reading comprehension section. Lastly, the results manifested that the students' literal and inferential reading comprehension achievements were positively influenced by the interaction between the RTAM and the students' preferred learning styles particularly within the experimental group where the elaborative-processing students exhibited better achievement than the deep-processing students, and their inferential reading comprehension achievement was higher than their literal reading comprehension achievement.

The differences between the groups in the overall reading comprehension achievement tests and in most of the tests of interactive relationships were significant at ($P < .05$), and the difference was in favor of the experimental group. And can be attributed to the teaching and instructional method utilized. The control students were taught according to the traditional method, and their lessons were administered according to explicit instructional strategies that they practiced on a daily basis. On the other hand, the experimental students were instructed in a different manner following the cognitive processing involved in RTAM. An

important conclusion that can be drawn from the results of the present study is that not only the instructional strategies of the RTAM can be effective, but also that they interact with the learners cognitive style. In particular the RTAM seems to have greatest effect for inferential learning for students with elaborative-processing style. This supports the conclusions of the initial analysis in this report that processes of reading that involve analysis and mechanisms to interact with pre-existing knowledge and mental processes are important and that the way this is managed interacts with readers learning style.

RECOMMENDATIONS

The core objective of the present research is to investigate the impact of the RTAM on Saudi EFL Preparatory Year students' reading comprehension. The study concluded that this model is an effective instructional model that enhances the students' literal and inferential reading comprehension achievements, particularly at the inferential level of reading comprehension among the elaborative-processing students.

Based on the results of the present study, the study proposes the following recommendations:

1. Further research should be conducted to investigate the impact of the RTAM on developing the English reading comprehension level of EFL students in other settings to ensure the conclusions reached apply to other students.

2. The RTAM should be used and refined over time with experience documented and results compared with other methods for teaching reading comprehension teaching strategies to ensure

thorough integration of new information with pre-existing knowledge.

3. To ensure effective use of this and similar models of instruction, teachers should be trained in the use of the RTAM and similar strategies for teaching reading.

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Appendix (1)

Reading Comprehension Achievement Test

Cancer and Nutrition

Because cell energy and essential cellular building blocks are derived from food, some cancer researchers have turned to a study of nutrition. The main sources of energy are carbohydrates and fats. Proteins are necessary not only as energy sources, but as cell building blocks. In addition to these major diet components, the body requires minerals, salts, and vitamins. There is no diet known to prevent cancer in man. And treatment of cancer by diet alone is not accepted by most doctors.

In general, both normal and cancer cells have the same nutrient requirements. However, one amino acid, asparagine, is manufactured in large quantities in normal cells but is not synthesized or produced by some cancer cells. Thus, such cells must obtain asparagine has been used to inhibit some tumors in animals by destroying the asparagine in their food supply. It is also useful in certain patients with acute leukemia, whose leukemia cells require asparagine for growth. However, there are more direct ways in which nutrition affects the development of cancers. A Chicago investigator showed that by cutting the food intake of mice by one-third, at which level the animals were quite healthy, but not so fat, the occurrence of breast cancers was reduced by 50%. Such changes in diet as those that produce severe weight loss in laboratory animals also affect tumor growth. However, cancers continue to grow under a variety of dietary conditions, including starvation.

At the time these laboratory experiments were being performed, a study of insurance policy holders also indicated a

higher occurrence of cancers among those who were overweight at the time of their insurance examination than among those of normal or below-average weight. However, more recent studies seem to indicate that there is no general increase in cancer related to excess weight in man.

Vitamins, minerals, and salts can modify the development and growth of certain specific cancers in animals. For instance, several investigators have reported a protective effect against cancers of the bronchus and uterus in experimental animals when vitamin A was administered. There is some evidence that vitamin deficiency in man plays a role in the occurrence of cancers of the oral cavity and the esophagus. If such deficiency exists, it is probably only one of a number of factors to be considered.

Test Questions

1. Body cells are strengthened by

a. Carbohydrates.

b. Fats.

c. Proteins.

2. Asparagine is described as

a. An anti-cancer drug.

b. An amino acid.

c. A natural hormone.

3. Leukemic cells require asparagine for:

a. Growth.

b. Division.

c. Resiliency.

4. A Chicago investigator experimented with cancer in

a. Rabbits.

b. Guinea pigs.

c. Mice.

5. The bronchus and uterus can be protected against cancer with

a. Iodized salt.

b. Vitamin A.

c. Potassium.

6. According to the author, some cancer cells are

a. Much larger than normal cells.

b. Unable to manufacture asparagine.

c. Usually killed with vitamins.

7. Latest cancer research shows that

a. Humans can contact cancer from animals.

b. Reducing food intake decreases the possibility of cancer.

c. Mouth cancer may be caused by vitamin deficiencies.

8. A study of insurance policy holders who developed cancer showed that

a. Cancer and excessive weight are related.

b. Cancer victims buy the most expensive policies.

c. No relationship exists between cancer and virus infection.

9. The author has no faith in

a. Doctors who treat cancer with radiation.

b. Diets that allegedly prevent cancer.

c. Researchers who subject animals to dangerous drugs.

10. The article suggests that cancer cells

a. Are really dead cells.

b. Feed on neighboring cells.

c. Survive under the same conditions as normal cells.

Chocolate: Everyone's Favorite Sweet

The Aztecs of Mexico are known to have made a beverage from cocoa beans, honey, maize, vanilla, and spices which they called "chocolatel". On his fourth voyage to the Americas in 1502, Columbus took cocoa beans back to Spain. The Spanish improved the taste with the addition of sugar, and chocolate eventually became a popular and expensive drink among European aristocrats. In 1728, Dr. Joseph Fry constructed the first chocolate factory, and one hundred years later the Dutchman Van Houten patented a machine for pressing cocoa powder. This made feasible modern dark chocolate which is solid chocolate made of the ground cocoa bean, cocoa butter, and sugar. In the case of milk chocolate, milk or dried milk is also an ingredient.

To make chocolate, a carefully blended selection of beans are first cleaned and mixed. After cleaning, the beans are roasted to bring out their full flavor; both the temperature and length of roasting critically determine the flavor.

The next part of the process is winnowing the beans, where the object is to separate the "nibs", or inside of the bean from the shell or husk. Various machines are designed for this, some of which will extract a greater proportion of the nibs. After the nibs have been broken into small fragments, they are ground into a soft mass from which all chocolate products are made.

The chocolate mass is then mixed with fine sugar and additional cocoa butter; the later is produced by pressing some of the cocoa mass, leaving cocoa cake as a residue which is manufactured into cocoa powder. In the case of milk chocolate, milk is also added at this time. Excess acids and moisture are

extracted and the mixture is refined, which involves passing it through rollers until the proper particle size is reached. This important step determines the texture of the chocolate.

The next step in the process is "conching" which is an art that chocolatiers have disagreed about since chocolate was first invented. This consists of kneading the chocolate over a shell or conch-shaped roller, and of aeration and temperature treatment, during which the product acquires a complete uniformity, and creaminess. At this stage, the flavor is fully developed. The length of the conching time and temperature is a secret of the chocolatier, but it usually ten to twenty-four hours at 65° C for milk chocolate and twenty-four to ninety-six hours at 75° C for dark chocolate.

Test Questions

1. What group of native Americans first used chocolate

a. The Aztecs.

b. The Incas.

c. The Navajo.

2. "Chocolatel" was an Aztec

a. Monument.

b. Beverage.

c. Ruler.

3. What is the different ingredient between dark and milk chocolate?

a. Sugar.

b. Milk.

c. Cocoa butter.

4. What part of the cocoa bean is the nib?

a. The shell.

b. The inside.

c. The entire bean.

5. Conching refers to the process of

a. Collecting shells.

b. Kneading chocolate.

c. Winnowing cocoa.

6. Chocolate was initially a drink for what group of Europeans?

a. The upper class.

b. The peasants.

c. All social classes.

7. For texture, the most important stage in chocolate making is

a. Winnowing the cocoa beans.

b. Rolling the chocolate mass.

c. Conching the chocolate mass.

8. For smoothness, the most important stage in chocolate making is

a. Conching the chocolate mass.

b. Winnowing the cocoa beans.

c. Roasting the cocoa beans.

9. What stage of the chocolate manufacture is a heavily guarded secret?

a. The winnowing stage.

b. The packaging stage.

c. The conching stage.

10. A good title for this selection could be

a. A diabetic's nightmare.

b. A Dieter's Delight.

c. The Process of chocolate making.

Appendix (2)

Inventory of Learning Processes Questionnaire (ILPQ)

Dear Student,

This questionnaire asks you questions regarding the way you learn. There are no "right" or "wrong" answers to these questions. With your help, the researcher is trying to find out the ways in which students learn best. Please indicate the level of your agreement or disagreement with each statement by circling the appropriate number according to the following: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree.

Item No.	Item Content
1.	After reading a unit of material, I give it enough time of thinking. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
2.	I ignore conflicts between the information obtained from different sources. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
3.	I learn new ideas by relating them to similar ideas. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
4.	When I study something, I develop a way for later recalling it. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
5.	I find it difficult to answer questions requiring critical thinking. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
6.	I think fast. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree

Item No.	Item Content
7.	I often memorize material I do not understand. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
8.	I find it difficult to make conclusions out of what I read. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
9.	New concepts usually make me think of similar concepts. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
10.	When I read. I try to reach firm facts. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
11.	I get good grades in research papers and reports. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
12.	I find it difficult to set a plan for facing a difficult task. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
13.	I learn new words and ideas by visualizing their practical contexts. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
14.	When I learn a unit, I usually summarize it in my own words. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
15.	I read critically. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
16.	I think a lot about things I have studied. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
17.	I learn new words and ideas by relating them to words and ideas I know. 1. Strongly disagree 2. Disagree 3. Agree 4.

Item No.	Item Content
	Strongly agree
18.	I find it difficult to learn how to study for a course. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
19.	While studying, I try to answer questions I have in my mind. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
20.	I get good grades on essay tests. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
21.	I find it difficult to remember a material for an exam. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
22.	While learning new concepts, their practical applications jump to my mind. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
23.	It is not easy for me to find appropriate words to express my ideas. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
24.	I am usually able to set plans for solving problems. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
25.	I find it difficult to answer questions requiring comparison between concepts. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
26.	Most of my teachers instruct us too fast. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
27.	I can usually get the deep meaning of educational films and readings.

Item No.	Item Content
	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
28.	I find it difficult to differential between similar ideas. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
29.	I learn new concepts by expressing them in my own words. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
30.	I can usually make a good guess even if I am not sure about the answer. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
31.	I find it difficult to organize the information I remember. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
32.	While reading, I look between and go beyond the lines. 1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree

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