THE EFFECTS OF CONCEPT MAPPING ON EFL STUDENTS' READING COMPREHENSION

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Abstract:

This study is aimed to investigate the effects of using concept mapping on EFL learners' reading comprehension and to examine their attitudes towards the implementation of concept mapping in reading lessons. The participants in this study were sixty-four first-year EFL students. These students were assigned into two groups: the experimental group and the control group. Both groups received the same number of sessions on reading lessons in the reading course but the intervention with concept mapping was only administered to the experimental group. The data were collected from the pre-test and post-test, and questionnaire. The findings indicated that there was a significant difference in the students' reading comprehension: the students in the experimental group outperformed those in the control group. The study also indicated the positive attitudes of the students towards the use of concept mapping in reading lessons. They enjoyed learning reading using concept mapping and perceived using concept mapping as beneficial in reading lessons.

Keywords: concept mapping, reading skill, EFL, student, reading performance

1. Introduction

Reading is widely recognized as one of the most important skills in the teaching and learning of English as a second/ foreign language (ESL/EFL). In particular, with regard to English language learning, learners of English tend to make greater progress or improve themselves by accomplishing reading tasks and other areas of language learning such as vocabulary, writing and grammar (Celce-Murcia and Olshtain, 2000). Thus, developing students' reading skills and strategies is one of the main goals of ESL/EFL teaching.

Recently, research has found that *concept mapping* is one of strategies which can enhance learners' reading comprehension (Chang, Sung, & Chen, 2002; Liu et al., 2010). Concept mapping is a graphic organizational strategy which can help individual and groups explain and explore their knowledge of a topic (Kinchin, 2000). It is for this reason that concept mapping appears to be an effective way to teach and learn about new information. The arguments for concept mapping include the importance of connecting new information to prior knowledge and experience (Jonassen, Peck, & Wilson, 1999), and the efficacy of building visual-verbal representations of knowledge (Novak & Gowin, 1984). Concept mapping can be used as a strategy which enables students to integrate background knowledge, and new information into a complete visual map. Constructing a concept map helps students discover how knowledge is related to prior knowledge in content areas. The visual map of the information organization also helps with understanding and recall (Liu et al., 2010). It has also been that concept mapping improve students' learning attitudes (Sabbaghan & Ansarian, 2013).

Although the effects of concept mapping on different student outcomes have been shown by many studies in first language (L1) and second language (L2) instruction, little research has been done about the effects of using the concept mapping strategy in EFL reading teaching and learning in Vietnam, especially in the teaching context under investigation. Therefore, the current study is intended to add to the knowledge of concept mapping for English reading teaching by showing the learners concept mapping as a useful tool in learning reading. Pedagogical implications and suggestions of this research will provide encouragement to teachers of English for the application of the teaching reading using concept mapping. This study is also expected to be a useful resource for the teachers and learners at the university and for those of other institutions.

2. Literature Review

2.1 Defining concept mapping

The notion of concept mapping (or concept maps) was firstly introduced in 1972 by Novak's research program at Cornell University where he studied changes in children's knowledge of science (Novak & Musonda, 1991). During the course of this study, the researchers interviewed many children and it was difficult for them to analyze the interview transcript. They invented the technique of concept mapping which they used to transform the information in the interview transcript into a hierarchical structure of concepts and relationship between concepts. Since its introduction, several researchers provided several definitions of concept maps (or concept mapping).

Concept map is defined as a graphical means of representing knowledge (Novak & Musonda, 1991). Similarly, Ruiz-Primo and Shavelson (1996) state that a concept map is a graph of nodes representing concept and lines indicating the relation between a pair of nodes. Later, Novak and Cañas (2008) further describe concept maps as graphical tools for organizing and representing knowledge. According to these authors, concept maps consist of concepts, usually enclosed in circles or boxes, and relationships between concepts indicated by a connecting line linking two concepts. Words on the line, referred to as linking words or linking phrases, specify the relationship between the two concepts. Concept is defined as "*a perceived regularity in events or objects, or records of events or objects, designated by a label*" (Novak & Cañas, 2008, p.177). Although the authors use different expressions of concept maps, these definitions have something in common. That is concept maps are considered as tools of representing knowledge of a particular subject matter. Also, in the present study, concept maps refer to graphical tools that help us organize and represent knowledge that is composed of concepts and the relationships among them.

2.2 Benefits of concept mapping on EFL reading skills

Several studies have been conducted to investigate the use of concept mapping on student learning, indicating through three phases of presenting lessons to students: pre-reading, while- reading, and post-reading. For instance, Carrell and his colleagues (1989) stated the effectiveness of text mapping techniques in enhancing second language reading as a proper alternative to traditional pre-reading activities. In an effort to enhance the students' reading comprehension, they implemented a pre-reading activity with concept mapping. In this stage, the students brainstormed about a given topic, made connections between ideas clusters, and displayed ideas on a graphic map. The researchers found that when used as a form of pre-task activity, concept mapping provided students with not only the concepts and words that they were about to encounter in the reading text but also an overview of the content to be learned.

A positive effect of concept mapping in pre-reading activity was supported by Fadhilah's study (2009). In the study, Fadhilah used concept mapping strategy as one of the strategies in teaching reading. In the pre-reading activity, the teacher stated the objective of the lesson, conducted brainstorming activities to stimulate the students' prior knowledge, and recorded the information gained in the form of a concept map as a model for the students to make their own version based on the text. The findings of the study indicated that concept mapping got the students actively involved in teaching and learning process and enabled them to improve the students' reading comprehension ability.

Moreover, concept mapping is used as a strategy in during and post-reading stage and it also has positive effects on students' reading comprehension and students' critical thinking ability. For example, Khodadady and Ghanizadeh (2011) reported on the positive influence of concept map construction on EFL learners' critical thinking ability, as well as on the attitudes toward EFL reading comprehension. The study revealed that when using the concept mapping technique during reading and post-reading phases, EFL students came to learn the interrelationships of ideas within the passage by identifying the main points and using circles or boxes to connect key words, thereby forming the word connections and promoting learning. In other words, signifying concepts and establishing relations among concept can pave the way for the manifestation of constructivist reading- accomplished through organization, selection, and connection, which leads to critical thinking abilities.

In a recent study, Liu and her colleagues (2010) tested the effects of a computer-assisted concept mapping learning strategy on EFL college learners' English reading comprehension. These authors conducted the research with four classes of students who were divided into low-level and high-level groups according to their level of English proficiency. Two classes were chosen as experimental group and other two classes as the control group. The numbers of poor and good readers were nearly the same in both groups. The treatment was administered in ten weeks, two hours a week. The finding of the study showed that concept mapping reading strategy was more effective than the traditional reading teaching strategy to enhance poor readers' reading comprehension and poor readers benefited more from concept mapping reading strategy than good readers. The researchers explained that concept mapping procedure promoted understanding by helping readers apply higher level reading strategies to enhance comprehension and reduce reading difficulties. In addition, the authors explained the reasons for the result that good readers did not get much benefit from concept mapping reading strategy is that good readers already have their own effective learning strategies and knowledge structure.

It can be said that concept mapping contributes much to the improvement in students' reading comprehension in many ways. When concept mapping is used in pre-reading stage, it can help to assess students' readiness to involve themselves in the reading text, brainstorm and generate new ideas, or foster their connection of prior knowledge to new knowledge. As a while and post-reading strategy, concept mapping helps readers to organize their knowledge of a particular subject matter in a more systematic and appropriate way to make the important concepts of an article explicit (Griffin, Malone, & Kammenui, 1995). Furthermore, concept mapping can stimulate one's metacognitive awareness while processing information in the reading text and

thus, assists the learner in integrating the bottom-up and top-down processing while monitoring the whole reading process (Hibert & Renkle, 2008).

3. Methods

3.1 Research questions

1. What are the effects of concept mapping on EFL students' reading comprehension?
2. What are EFL students' attitudes towards the implementation of concept mapping in the teaching and learning of reading comprehension?

3.2 Participants

The participants in this study were 64 first-year students at a university in the Mekong Delta of Vietnam, whose majors are English. These students came from two classes, which were assigned into two groups of experimental and control. The same teacher taught two groups with 32 students in the experimental group (3 males and 29 females) and 32 students in the control group (2 males and 30 females). The selection of the groups was based on the analogy in terms of students' age, gender, English learning experience and the results of the reading comprehension test in the previous semester. Neither of the groups was different from the others in terms of age ranging from 18 to 20. Most participants have studied English in an EFL setting for at least seven years in high school. Based on the findings of the test in the pre-test, participants' reading ability of the two groups before participating in this study could be considered the same ($t=$ -.65, $df=$ 62, $p=$ 0.5), at just average level ($M=$ 5.30, $SD=$ 1.64) for the control group; and ($M=$ 5.56, $SD=$ 1.56) for the experimental group. Therefore, it can be concluded that there was a resemblance in the features, namely the number of students, age range, gender, and reading ability. Another reason for this selection of the participants was that concept mapping is one of the important reading strategies which students needed to develop so that they were expected to improve their learning in the long run.

3.3 Research instruments

A. Reading tests

In this study, two tests were given to students taken from *Interactions 2 Reading Teacher's Edition with Tests*, Silver Edition, 2007 published by McGraw-Hill ESL/ELT. The reading tests were chosen since *Interactions 2 Reading Silver Edition* was the official students' book taught at the university. Therefore, the topics of the reading texts in the tests were based on the topics of the reading material that the students were studying. Therefore,

the topics of the texts were equally familiar to the participants. This could minimize the vocabulary difficulty to the test-takers and focus on testing comprehension.

The pre-test and post-test were similar in form with the same format, number of items, and allotted time. Both tests consisted twenty-five multiple choice questions. The time allotted to complete the tests was fifty minutes (see Appendix). These tests were piloted on a group of 30 first year students at the same level and the same school as the participants in the current study. The results of the pilot tests were analyzed using the SPSS software program. The reliability of the pilot pre-test was $\alpha = .70$, and of the piloted post-test was $\alpha = .74$.

B. Questionnaire

A 17-item questionnaire was designed with five-point likert, namely *totally disagree, disagree*, *neutral, agree* and *totally agree*. Scale was graded as number (1) totally disagree, (2) disagree, (3) neutral, (4) agree and (5) totally agree. The questionnaire was adapted from the questionnaires by Sabbaghan & Ansarian (2013) and Le (2009). All items were categorized into the three clusters: (1) attitudes towards the teacher's application of concept mapping in teaching reading, (2) participants' perception of the benefits of concept mapping in reading, and (3) participants difficulties in using concept mapping in reading.

The questionnaire was designed in English and translated into Vietnamese to ensure that its content and language use were clear to participants. For the translation, first the researcher did it by herself, check carefully to make sure all the questionnaire items appear as natural as Vietnamese in daily life. Then, the Vietnamese version of the questionnaire was sent to her colleagues for revision and feedback. The questionnaire was piloted in a group of fifteen members in the experimental group. The reliability coefficient of the questionnaire was relatively high ($\alpha = .89$).

C. Research procedure

Table 1: Research procedure

Week	Activities	Content	Purpose	Group
1	Pre-test	A 50-minute reading comprehension test	Measure participants' reading ability	The experimental group and control group
2 - 6	Intervention	Using concept mapping in teaching and learning of reading	Investigate the effects of using concept mapping on the participants' reading comprehension	The experimental group

Week	Activities	Content	Purpose	Group
7	Post-test	A 60-minute reading comprehension	Consider whether there was a significant difference caused by the intervention	Two groups
	Questionnaire	A Vietnamese version of the questionnaire	Explore the participants attitudes toward the use of concept mapping in teaching and learning of reading	The experimental group

4. Findings

4.1 Reading tests results

Table 2: Descriptive statistics of participants' reading performance

Conditions	Tests	N	Min.	Max.	Mean	SD
Control	Pre –	32	2.0	9.2	5.3	1.644
	Post –		4.4	8.8	6.4	1.100
Experimental	Pre –	32	2.8	9.2	5.5	1.565
	Post -		5.2	9.6	7.65	1.239

As can be seen in Table 2, the pre-test mean scores of the participants' reading comprehension of the control group $(M_{pre} = 5.3)$ and that of the experimental group $(M_{post} = 5.5)$ are at the average on the scale of 0.5 to 10. The mean score of the post-test of the two groups $(M_{postCon} = 6.4, M_{postEx} = 7.65)$ was higher in comparison with that of the pre-test. This indicates that participants' reading performance in the two groups was different after the study. An *Independent-Sample t test* was conducted in order to measure whether there is a difference in reading ability of the participants between the two groups before the study. The results of the *Independent-Sample T test* showed that there was no difference between the mean score of the control group $(M_{pre} = 5.3, SD = 1.64)$, and that of the experimental group $(M_{pre} = 5.5, SD = 1.56), (t = -.65, df = 62, p = 0.5)$. It could be concluded that before the study, participants of the two groups were the same to each other in terms of reading comprehension level.

Table 2 also illustrates that both groups' mean scores in the post tests were improved (from 5.3 to 6.4 for the control, and 5.5 to 7.65 for the experimental), but the mean score of the participants' reading performance of the experimental group after the study $(M_{post} = 7.65)$ was higher than that of the control group $(M_{post} = 6.4)$. The results of the *Independent-Sample t test* on the post-test of the two groups indicated that there was a significant difference between the mean score of the participants' reading

performance of the control group after the study and that of the experimental group *(t =
-4.14, df = 62, p=.00)*. This means that after the study the participants' reading
comprehension level in the experimental group was higher than that of the control
group.

4.2 Results from the questionnaire

Table 3: Descriptive statistics of participants' attitudes

Group	N	Min	Max	Mean	Std. Deviation
Experimental	32	2.29	4.53	3.8401	.43541

The mean score of the questionnaire shown in table 4.2 is at high level (*M* = 3.84). *One-
Sample t Test* was used to evaluate whether the mean score of participants' attitudes was
significantly different from 4 the accepted mean for high level in general. The result of
the *One-Sample t Test* revealed that the sample mean was significant different from 4.0 (*t
= - 2.08, df = 31, p = .046*). However, this mean was still higher than 3.5 the accepted
mean for high level. Therefore, in can be concluded that the participants had positive
attitudes towards the use of concept mapping in teaching and learning reading in
general.

Table 4: Descriptive statistic of benefits of concept mapping in reading

Item2 ➜ Item13	N	Min	Max	Mean	SD
Benefits	32	2.33	4.83	4.06	.467

An *One-Sample t Test* was used to evaluate whether the mean score of concept
mapping's advantages was significantly different from 4 the accepted mean for high
level in general. The result of *One-Sample t Test* indicated that the sample mean was not
significantly different from 4.0 (*t = .756, df = 31, p = .45*). This indicated that most
participants found concept mapping useful for their reading.

Table 5: Descriptive statistic of benefits of concept mapping in reading in detail

Benefits	N	Min	Max	Mean	SD
Motivation in learning reading	32	2.50	5.00	4.10	.571
Activating prior knowledge	32	3.00	4.67	4.05	.494
Identifying organization of a reading text	32	2.00	5.00	4.14	.612
Retention of vocabulary and information	32	1.00	5.00	3.71	.771
Summarizing a reading text	32	3.00	5.00	4.18	.692
Working in groups	32	1.00	5.00	3.96	.932

From the Table 5, it was indicated that the benefit of summarizing a reading text had the highest mean *(M=4.18; SD=.692)* whereas the benefit that the participants had the least was the retention of vocabulary and information of the reading text *(M=3.71; SD=.771)*. In addition, the participants had a high sense of identifying organization of reading texts *(M=4.14; SD=.612)*, and being motivated in learning reading *(M= 4.10; SD=.571)* but they had lower level continuum in activating prior knowledge *(M= 4.05; SD=.494)*, as well as working in groups *(M=3.96; SD=.932)*.

Table 6: Descriptive statistic of participants' problems

Problems	N	Min	Max	Mean	SD
Confusion because of the new strategy	32	1.00	5.00	2.06	1.318
Lack of vocabulary	32	1.00	5.00	4.18	.997
Organizing ideas	32	3.00	5.00	4.06	.618
Time consuming	32	1.00	4.00	2.03	.897

The results of the *Descriptive Statistic Test* with regard to participants' problems towards the use of concept mapping revealed that the participants' lack of vocabulary *(M= 4.18, SD =.997)* and organizing ideas into a concept map *(M=4.06, SD = .618)* were the participants' salient problems.

5. Discussion

5.1 Effects of the use of concept mapping on participants' reading comprehension
The findings showed that concept mapping made positive impacts on the participants' reading comprehension. There was a significant difference between the mean score of the participants' reading performance of the control group after the study and that of the experimental group. The significant difference indicated that the implementation of concept mapping had positive impacts to the improvement of the participants' reading comprehension in the experimental group. This finding is consistent with the theoretical assumptions of previous researchers (e.g., Hilbert & Renkle, 2008; Kinchin, 2000; Cañas & Novak, 2006) who claim that concept mapping is a useful strategy for students to develop their reading ability and skills. The findings of the current study are also in line with the findings of other empirical studies (e.g., Carrell et al., 1989; Fadhilah, 2009; Liu et al., 2010). For example, Carrell and his colleagues (1989) found that when used as a pre-reading activity, concept mapping could enhance the students' reading comprehension by providing the students not only concepts that they encounter in the reading text but also an overview of the content. Similarly, Griffin and his colleagues (1995) and Fadhilah (2009) revealed that concept mapping got students

involved actively in the teaching and learning process, and as a result, they improved reading comprehension ability. Similarly, a study by Liu and her colleagues (2010) reported the positive effect of concept mapping on promoting students' reading ability through identifying the main ideas and establishing the connections between ideas.

There could be some possible explanations for the positive effects of concept mapping on the students' reading comprehension in this current study. First of all, in order to construct a concept map, students could use different skills in the process of learning such as identifying main ideas, details, linking information given in a text to their background knowledge, and summarizing such information into a form of concept maps. In other words, it is likely that during concept mapping, students got a general idea of the reading text and learned about the relationships between ideas in the text. When understanding the relationship, the students gained more understanding about the text, thereby enabling them to comprehend text messages better.

Secondly, according to Ausubel's (1968) theory of learning, meaningful learning take places as a process in which learners must choose to relate new information to relevant knowledge that already exists in the learners' cognitive process. Concept mapping reported in this study fits well with the theory that highlights the role of the learners as active participants in their learning process. Implementation of concept maps can help them activate their background knowledge or prior knowledge while reading (Novak et al., 2008). Additionally, concept mapping allows students to actively engage in learning by identifying the main topic, important concepts and their relationship with the text, and organizing them into a concept map (Khodadady & Ghanizadeh, 2011). Thus, this active involvement can lead to meaningful learning and better reading performance of the experimental group in comparison with that of the control group.

5.2 Participants' attitudes towards the implementation of concept mapping

The findings from the questionnaire revealed that the participants had positive attitudes towards the implementation of concept mapping in teaching and learning reading comprehension. Their positive attitudes could be explained by the progress they made in their reading performance. The implementation of concept mapping assisted the participants in understanding the reading texts, thereby resulting in increased confidence and beliefs in their own reading ability. This finding is consistent with the empirical findings from other studies of Huang (2000), Phantharakphong & Pothitha (2013), and Sabbaghan & Ansarian, (2013). These researchers found that using concept maps increases students' motivation to learn, promotes their active engagement in further studies and possibly leads to better reading capacity.

With regard to students' perceptions of the benefits of concept mapping, one of the reasons could be that the students were activated by the questions to help them specify the main topic and general and detailed concepts of a particular reading text in their learning process. Also, the students used different reading skills like focusing, highlighting, classifying, summarizing, thus using these skills helped them improve their reading comprehension ability. The benefits of concept mapping on reading achievement found in this study are supported in the literature (e.g., Hilbert & Renkle, 2008; Novak & Cañas, 2008). These authors asserted the positive influence of concept mapping on developing students' reading comprehension ability. The participants also pointed out particular benefits they gained from using concept mapping in reading lessons in terms of identifying organization of the information of reading texts, summarizing a reading text, and activating learners' prior knowledge. The findings from the current study are consistent with the assumptions and of other researchers (Novak & Cañas, 2008) who highlighted the importance of concept mapping that triggers students' high order thinking skills.

5.3 Relevant problems in the use of concept mapping

It was also found that the participants presented several difficulties they had encountered while using concept mapping in reading lessons such as time constraints, lack of vocabulary, and difficulty in summarizing skills. These difficulties were found to be similar to some extent to possible challenges of the implementation of concept mapping faced by students in the literature, which are very essential to be taken into consideration when concept mapping is applied (Armbruster & Anderson, 1984; Novak & Gowin, 1984; Wandersee, 1990). First of all, constructing a graphic organizer (a concept map as an example) needs a lot of time, since students must spend time and effort thinking about what to be included in the map (Armbruster & Anderson, 1984). Secondly, Wandersee (1990) pointed out that when students identify relationships among ideas, they sometimes need to paraphrase or create words to labels the relationships appropriately. It is stated that students find hard to add linking words to construct concept maps. This is because they only poorly understand the relationship between the concepts and it is linking words that specify such relationship. This may cause difficulty for students when using concept mapping to summarize the information of reading texts. However, once students are encouraged to focus on linking words, they can see that every concept is likely to n be related to each other in some ways. Thus, concept mapping is considered as an effective way to achieve high level of cognitive performance, namely evaluation and synthesis (Novak & Cañas, 2008).

6. Conclusions

The current study was conducted to investigate the effects of using concept mapping as a strategy on EFL learners' reading comprehension competence at a university in Mekong Delta, and explore learners' attitudes towards using concept mapping in reading lessons. The findings from the current study reveal that concept mapping positively influences EFL students' reading comprehension. In addition, the findings also indicate that the students had positive attitudes toward using concept mapping in reading lessons. The participating students perceived the benefits of concept mapping through identifying the organization of the information in a reading text easily, summarizing it effectively, enhancing motivation while reading, activating prior knowledge to construct new ideas, and improving retention of information. However, it was noticed that the participants reported that time constraints, lack of vocabulary, and difficulty in summarizing skills were only minor problems while they were studying how to use concept maps.

The findings from this study present several pedagogical implications for using concept mapping in teaching and learning reading comprehension. Firstly, concept mapping positively influenced students' motivation, which is more likely to help them to engage in their learning activities actively and dynamically. Secondly, concept mapping should be considered for the implementation in teaching and learning in a broader context to help more students improve their reading comprehension. Thirdly, once teachers are aspired to promote their students' reading comprehension ability and their motivation to learn reading, students are willing to practice this learning strategy more often to advance their higher order thinking skill for academic success in the long run. Based on the students' perceptions on the possible difficulties and suggestions they provided for further implementation of concept mapping, this study also comes up with several recommendations towards the implementation with regard to student learning of reading comprehension. The current study suggests the guidelines on how to construct a concept map; and as a result of this course of action, careful design and clear instructions of the implementation of concept maps in reading practices should be provided to students. Another way to forward this learning strategy is that sufficient time allocated for the students to construct concept maps in their reading lessons should be taken into account. Ultimately, appropriate use of concept maps pertinent to reading contents, the text length and coverage may encourage students to learn more effectively while applying concept maps.

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Appendix 1

A. Reading Comprehension Test
(Pre-Test)
I. Vocabulary section: *Choose the best word to complete each sentence*

1. No one lives with Rosa in her apartment. She lives _____

    A. alone   B. lonely   C. only   D. together

2. Tom's family has 3 children, Amy's family has 3 children, Reina's family has 2 children, and Ben's family has 2 children. The _____ number of children in these families is 2.5.

    A. small   B. average   C. equal   D. total

3. When teacher speak too softly and rapidly, it is _____ for their students to understand them.

    A. easy   B. little   C. different   D. difficult

4. Mr. Lee's restaurant is successful because he always waits on his _____ politely and serves them wonderful meals.

        A. customs   B. customers   C. consumers   D. users

5. I wouldn't go to the new mall just yet. If you can _____ another week or two, until the Grand Opening is over, the crowds will be much more manageable.

        A. hold out   B. hold up   C. wait on   D. hold onto

Read each item and then answer the vocabulary question below it

6. The brain is divided into many parts. Each part serves specific and important functions. The cerebrum is the largest and most complex **area** of the brain. It controls thought, learning, and may other activities.

Which of the following is closet in meaning to 'area' as it used above?

        A. the size of a surface, calculated by multiplying the length by the width.

        B. a particular subject or group of related subjects

        C. a particular part or section

        D. a part of an activity or a thought

7. By studying the pyramids of Egypt, researchers have learned a great deal about ancient Egyptian **culture**. They have discovered, for example, that different social classes existed even in the earliest cities.

Which of the following is closet in meaning to "culture" as it is used above?

        A. activities that are related to art, music, and literature

        B. a society that existed at a particular time in history

        C. a scientific experiment of people from a particular country

        D. education of people in a certain social group

8. Roger has some annoying tendencies. For one thing, he's **inclined** to talk about himself and his achievements.

Which of the following is closet in meaning to "inclined" as it is used above?

        A. bending forward to say something

        B. likely to do something or behave in a particular way

        C. holding a particular opinion

        D. talking a lot about the same thing

9. Studies in public schools have shown that **exposure** to art and music has many benefits for children. It improves their literacy, critical thinking, and math skills.

Which of the following is closet in meaning to "exposure" as it is used above?

        A. a situation in which someone is not protected from risk or danger

        B. attention that someone gets from newspapers, television, etc.

        C. the chance to experience something

        D. the act of showing something that is usually hidden

10. In recent years, it seems that headlines and articles about war and violence have **occupied** the front pages of newspapers everywhere.

Which of the following is closet in meaning to "occupied" as it is used above?

    A. taken up time

    B. lived in a place

    C. controlled a place by military force

    D. filled a particular amount of space

II. Reading section: *Read each passage and answer the questions below to it.*

Reading passage 1

How do you react to the taste of different foods, like coffee or lemon? Do they have a flavor that you like? Or do they taste very strong to you? Why do people react differently to different flavors?

We all know that different people have different food preferences. Researchers have discovered some reasons for these differences. Your culture and your life experience are partly responsible for your preferences for certain foods. Your food preferences are also partly genetic. (Your genetic preferences are the ones that you were born with). In order to discover people's genetic preferences, researchers use a chemical called PROP. People taste it and respond to the taste. To some people, PROP has no flavor. The researchers classify these people as "non-tasters". To other people, the flavor of PROP is a little bitter, or sharp. These people are "tasters". Then there are the people who can't stand the flavor of PROP. They find it to be unbearably bitter. These people are the "supertasters". Tasters have more taste buds on their tongues than non-tasters do, and supertasters have many more taste buds than tasters do. This explains why supertasters are more sensitive to PROP and to the flavors in certain foods. So if you think the flavors in coffee, grapefruit juice, and broccoli are very strong, you may be a "supertaster."

11. The main idea of the reading is that_____.

    A. there are people who like different foods

    B. there are cultural and genetic reasons for the differences in people's food preference

    C. some foods have a very strong flavor

    D. PROPs can be used to identify different types of tastes

12. The meaning of genetic preference is _____.

    A. preferences for certain foods   C. preferences researchers have discovered

    B. the preferences of some people born with   D. the preferences that people are

13. What is PROP?

A. a chemical

C. something that people are born with

B. a discovery

D. a researcher

14. Why do researchers use PROP?

A. because it has no flavor people were born with

C. to find out the responses to foods

B. to discover the flavors in certain foods

D. because people like its flavor

15. A food that is bitter has _____.

A. no flavor   B. little flavor   C. a coffee flavor   D. a sharp flavor

16. People who _____ are classified as supertasters.

A. can't stand the flavor of PROP

C. think that PROP has no flavor

B. think that PROP tastes a little bitter

D. like bitter flavors

17. Taste buds are probably _____.

A. tiny pieces of food surface of people's tongues

C. the small bumps on the

B. chemicals in food that give it its flavor

D. something in broccoli, grapefruit juice, and coffee

Reading passage 2

In recent years, the games of golf and golf tourism have grown in popularity in many places in the world. Golf, which traces its roots back to 15th century Scotland, is often viewed as a pleasant and harmless way to relax in a natural setting. But golf course is not natural developments. They are artificial constructions that have a big environment impacts. As a result, there is often controversy about the building of golf courses.

Opponents of the use of land for golf courses bring up a number of environmental concerns. One is that a golf course covers a great deal of land, typically up to 200 acres, and in the process of developing this land into a golf course, it is common for fragile native ecosystems such as wetlands, rainforests, or coastal dunes to be destroyed. Indigenous grasses, shrubs, and trees are removed and replaced by foreign vegetation. The construction process causes soil erosion and results in the loss of biodiversity and habitat for wildlife. Another concern is the amount of chemical pesticides, herbicides, and fertilizers used to maintain the grass on a golf course once it is established. These chemicals can result in toxic contamination of the air, the soil, the surface water, and the underground water, and this is turn leads to health problems for people who live near the course or downstream from it, for people who work at the course, and even for the golfers. Yet another concern is that golf courses require an enormous amount of water every day. Their water consumption can lead to depletion of scarce fresh water resources. These and other concerns about golf courses have

provoked protests, most recently in east and Southeast Asia, against planned golf projects.

Designers, developers, and operators of golf courses have become increasingly aware of the environmental issues and of the protests. Consequently, they have sponsored research into more environmentally sensitive ways of constructing and maintaining courses. They believe that it is possible to build golf courses which protect and preserve the natural features of the landscape and natural habitats for wildlife. Their suggested practices include using native trees and shrubs, planting types of grass that require less water and are the best adapted to the local climate, and using reclaimed water. Proponents of golf courses believe that these "green" golf courses can actually provide environmental benefits to their sites.

However, even a "green" golf course is likely to result in some environmental degradation and loss of habitat. Therefore, many biologists and wildlife ecologists, such as Lawrence Woolbright, a professor at Siena College in Albany, New York, contend that the best places to construct new golf courses are places that are already degraded, such as former landfills (garbage dumps) and old industrial sites, rather than on undeveloped land. A golf course that transforms a degraded site into a scenic landscape with wetlands and woodlands and habitat for wildlife could actually be a benefit to the environment.

18. Which of the following is the best statement of the main idea of the reading passage?

    A. Golf courses are artificial constructions, and are often built with no regard for the environment.

    B. Controversies about golf courses affect the tourist trade.

    C. Golf courses have significant effects on the environment, and these effects lead to controversy.

    D. Golf and golf tourism are growing in popularity internationally, leading to a more negative effect on the environment.

19. What word is opposite in meaning to the word indigenous?

    A. native   B. foreign   C. natural   D. vegetation

20. Which of the following is not mentioned in the passage as a negative environment impact of a golf course?

    A. The destruction of fragile native ecosystems caused by cutting down tree   C. Soil erosion

    B. Pollution caused by traffic and maintenance equipment   D. Depletion of scare fresh water resources

21. Which of the best summarizes the environmental concerns of opponents of the use of land for golf course?

    A. They are concerned about the amount of land that a golf course covers.

    B. They are concerned about the impact of the process of constructing new golf courses.

    C. They are concerned about the impact of the maintenance of established golf courses.

    D. All of the above.

22. Based on paragraph 3 and paragraph 4, we can infer that a "green" golf course is one that _____.

    A. consumes a great deal of water   C. is environmentally sensitive

    B. is new and not degraded   D. has grass, shrubs, and trees

23. Based on paragraph 3, we can conclude that _____.

    A. it is certain that "green" golf courses have already been built

    B. it is certain that "green" golf courses will be built in the future

    C. it is not certain that any "green" golf courses have already been built or will be built in the future

    D. opponents of golf courses accept the idea that "green" golf courses can actually provide environmental benefits to their sites

24. Based on paragraph 4, we can infer that the author of the passage _____.

    A. agrees with Lawrence Woolbright

    B. disagrees with Lawrence Woolbright

    C. is willing to accept some environmental degradation and loss of habitat

    D. is opposed to all golf courses

25. What would be an appropriate title for this reading passage?

    A. A Brief History of Golf   C. Golf's Dirty Side

    B. Why Make Golf Green?   D. The Beauty of Golf

B. Reading Comprehension Test

(Post-Test)

I. Vocabulary section: *Choose the best word to complete each sentence*

1. In many cultures, women do most of the _____ . For example, they clean the floors and wash the clothes for their families.

    A. farming   B. homework   C. housework   D. cooking

2. In a basketball game, two teams _____ against each other to score points by throwing a ball into a basket.

    A. compete   B. cooperate   C. complete   D. exercise

3. In this country doctors usually have high _____, or position in the society.

    A. profession   B. situation   C. state   D. status

4. Many companies in the computer industry were started by very young people. For example, Bill Gates was only twenty years old when he and Paul Allen _____ the Microsoft Corporation in 1975.

      A. based   B. discovered   C. located   D. founded

5. _____ up to 20% is customary in U.S. restaurants. Some places even add 15% to the bill for all parties of six or more.

      A. waiting   B. Tipping   C. Buying   D. Eating

Read each item and then answer the vocabulary question below it

6. Timothy is going to ride his bike around the world. In order to see all the countries and sights he wants to, before he begin his adventure, he will **map** his route.

Which of the following is the closet in meaning to "map" as it is used above?

      A. to pack bags for a trip

      B. to plan the path of a trip

      C. to prepare a bicycle for a trip

      D. to talk about something

7. With today's computer networks, the **transmission** of data from one place in the world to another can happen instantly.

Which of the following is the closet in meaning to "transmission" as it is used above?

      A. the process of working together on the same computer network

      B. a job that involves traveling from one place to another

      C. the set of parts of a vehicle that take power from the engine to the wheels

      D. the process of sending information using electronic equipment

8. At medical centers throughout the United States, researchers are **conducting** investigations into the causes of heart disease.

Which of the following is closet in meaning to "conducting" as it is used above?

      A. carrying out an activity or process in order to get information or prove facts

      B. directing the playing of an orchestra, band, etc.

      C. carrying something like electricity or heat to cure heart disease

      D. guiding or leading someone somewhere

9. Ronald and James are roommates in university dormitory. They have frequent arguments because Ronald prefers to go to sleep early and James always stays up late. Also, Ronald likes quiet while he studies, but James insists that loud music helps him concentrate. How can James and Ronald **resolve** these conflicts?

Which of the following is closet in meaning to "resolve" as it is used above?

      A. make a definite decision to do something

      B. solve again using new techniques

      C. gradually change into something else

    D. find a satisfactory way of dealing with a problem or difficulty

10. It is important that students learn to read and write before they go to college. In particular, they need to practice reading on their own and learn how to write a **succinct** and logical argument.

Which of the following is closet in meaning to "succinct" as it is used above?

    A. taking a long time to explain

    B. correct

    C. original

    D. clearly and concisely expressed

II. Reading section: *Read each passage and answer the questions below to it.*

Reading passage 1

After a cold, snowy winter, many people look forward to the long hot days of summer. The normal heat of summer can be pleasant. However, it's important to be aware that **excessive** – that is, too much – heat can be dangerous. There are other summer weather dangers, for example, tornadoes, lightning, and floods, but excessive heat kills more people each year than any of these. According to meteorologists (weather scientists), a heat wave is a period of excessive heat that last two days or more. A heat wave stresses people and can cause illnesses. These illnesses include heat cramps, heat exhaustion, and heat stroke. The people who are at the greatest risk during heat waves are the elderly, babies, and those with serious diseases.

    High humidity (moisture in the air) can make the effects of heat even more harmful. As humidity increases, the air seems warmer than it actually is because it's more difficult for the body to cool itself through the evaporation of perspiration. During heat waves, meteorologists use the heat index to determine the level of danger. The heat index measures how hot it really feels when high humidity is added to the actual air temperature. As an example, if the air temperature is 95° F (Fahrenheit) and the humidity is 35%, the heat index is 98° F. But if the air temperature is 95° F and the humidity is 75%, the heat index is 124° F. Doctors say that even young, healthy people can die of heat stroke if they exercise outside when the heat index is high. During a heat wave, it's best to take it easy, drink plenty of water, and stay out of the heat as much as possible.

11. The main idea of paragraph 1 is that _____.

    A. people look forward to the long hot days of summer

    B. too much heat can have dangerous effects

    C. tornadoes, lightning, and floods are dangerous

    D. meteorologists can define heat waves

12. The main idea of paragraph 2 is that _____.

A. humidity is moisture in the air

B. meteorologists use the heat index during heat waves

C. high humidity increases the danger of high air temperatures

D. it's important to stay inside during a heat wave

13. The word "**excessive**" means _____.

    A. too much   B. important   C. long   D. coming in waves

14. In the passage, lightning is mentioned as an example of _____.

    A. excessive heat   C. a storm

     B. a stress on people   D. a summer weather condition

15. A meteorologist is _____.

     A. a doctor   C. a weather scientist

     B. a space scientist   D. a dangerous weather condition

16. The heat index measures _____.

A. the amount of moisture in the air

B. air temperature

C. a person's temperature body temperature

D. the heat that the body feels when heat and humidity are combined

17. Based on the information in the passage, which statement is true?

A. Young healthy people are more likely to die from excessive heat than elderly people are.

B. The elderly, babies, and people with serious diseases are most likely to die from excessive heat, but it can kill young, healthy people, too.

C. Perspiration is a dangerous effect of excessive heat.

D. All heat waves include high humidity.

18. Why did the author write this passage?

A. To warn people about the dangers of excessive heat and give suggestions about avoiding them.

B. To give people useful information about the weather in the summer.

C. To describe the work of meteorologists and their use of the heat index.

D. To let people know how the body can cool itself naturally.

Reading passage 2

Even though education is compulsory (required by law) for children in the United States. It is not compulsory for them to go to a **conventional** school to get that education. In every one of the 50 states, it is legal for parents to educate their children at home, or to "home school" their children. Although no state requires parents to have special training to home school their children, the regulations parents must follow vary widely from state to state. New Jersey, for example, imposes virtually no requirements.

In contrast, New York requires home schoolers to notify their school districts, file instructional plans and frequent reports, and submit the results of tests or other forms of assessment for each child.

Increasing numbers of American families have been opting for home schooling. According to the National Center for Educational Statistics, about 1.1 million children were being home schooled in the spring of 2003. This represents an increase from the 850,000 who were being home schooled in the spring of 1990. In addition, the home-schooling rate- the percentage of the school-age population that was being home schooled- increased from 1.7 percent in 1992 to 2.2 percent in 2003.

A survey conducted in 2003 asked parents to give their most important reasons for home schooling their children. Thirty-one percent cited concerns about the environment in conventional schools, including safety, drugs, or negative peer pressure. Thirty percent said that the most important reason was to provide religious or moral instruction. Sixteen percent said that the most important reason was dissatisfaction with academic instruction at conventional schools. Parents gave other reasons, too; for instance, many said that they wanted to strengthen family bonds or allow their children more freedom.

It is difficult to show whether conventional schooling or home schooling works better. Home-schooled children tend to score significantly higher than the national average on college entrance tests. But educators say that it isn't easy to determine how meaningful the figures are, given the complexities of making direct comparisons. In the debate about home schooling, socialization is more of an issue than achievement. Advocates of conventional education believe that home-schooled children are at disadvantage because they miss out on the kinds of social interaction and relationships with peers that are an essential part of a total education. Advocates of home schooling say that home-schooled children are not socially isolated; they think that home-schooled children have a larger social structure because they can be out in the world, in contact with people of different ages, and having experiences that they could never have in conventional schools.

19. The word conventional means _____.

    A. relating to a meeting   C. following what is normal or usual

    B. following a religion   D. educational

20. According to the passage, increasing numbers of American families are choosing home schooling. What information does the author give to support this statement?

    A. In every one of the 50 states, it is legal for parents to educate their children at home.

    B. Thirty-one percent of parents say that the most important reason for home schooling is concerns about the environment in conventional schools.

> C. The number of children who were being home schooled increased from 850,000 in 1990 to about 1.1 million in 2003.
>
> D. A survey was conducted in 2003.

21. How many of the parents surveyed in 2003 said that the most important reason for home schooling their children was dissatisfaction with academic instruction at conventional schools?

　A. 1.1 million　　　　B. 30 percent　　　　C. 16 percent　　　　D. 2.2 percent

22. Three of the following statements give facts, and one gives opinion. Based on the reading passage, which one is the opinion?

　A. Home- schooled children are at a disadvantage because they miss out on some kinds of social interaction and relationships.

　B. Thirty percent of parents who home school their children said that the most important reason was to provide religious or moral instruction.

　C. The home-schooling rate increased from 1.7 percent in 1999 to 2.2 percent in 2003.

　D. The regulations that parents of home schoolers must follow vary widely from state to state.

23. Which paragraph gives information about the number of home-schooled children who attend college?

　A. Paragraph 2　　　　　　　　　　C. Paragraph 4

　B. Paragraph 3　　　　　　　　　　D. That information is not given in the passage.

24. In paragraph 4, the author implies, but does not state directly, that _____.

　A. home-schooled children tend to score significant higher than the national average on college entrance tests

　B. it should be easy to make direct comparisons between conventional and home schooling

　C. parents are not academically qualified to teach their children

　D. there is controversy about the benefits of home schooling

25. Based on paragraph 4, we can conclude that advocates of conventional education object to home schooling because home-schooled children _____.

　A. cannot achieve academically

　B. cannot be compared to conventionally educated children

　C. are not well socialized

　D. have too much freedom

C. The End

Questionnaire

Part 1. Personal information

1. Age: ………

2. Gender: (Please circle the answer)

   A. Male   B. Female

Part 2. Content

For statements 1-17, please indicate your opinions by putting an "X" in the box that show the extent to which you agree or disagree.

A=Strongly disagree; B=Disagree; C=Neutral; D=Agree; E=Strongly agree

No.	Statements	A	B	C	D	E
1	I enjoy the teacher's use of concept mapping in teaching reading.					
2	I find using concept mapping in learning reading interesting.					
3	Concept mapping makes classroom atmosphere lively and active.					
4	I am motivated in reading lessons using concept mapping.					
5	Concept mapping fosters students' attention and active engagement in learning reading.					
6	Using concept mapping in pre-reading stage helps students to brainstorm new ideas related to the reading text.					
7	Concept mapping can help students to have an idea about the structure and content of the reading text before reading it.					
8	Concept mapping helps students to connect new information to their prior knowledge.					
9	Concept mapping can help students to distinguish main ideas from details of the reading text easier.					
10	Concept mapping helps students to learn about the relationships between different ideas in the reading text.					
11	Concept mapping can help students to strengthen the retention of ideas and vocabulary of the reading text.					
12	Concept mapping is an effective tool for students to organize and summarize text ideas and information during reading.					
13	Concept mapping encourage students to work in groups (through discussion).					
14	Concept mapping is new, thus it may cause some confusion.					
15	Concept mapping is a difficult task for students who have limited vocabulary					
16	Concept mapping is found hard for students to organize ideas and their links.					
17	It is time-consuming to construct a concept map.					