The Effect of Analyzing and Reasoning, as Cognitive Strategies, on Iranian EFL Students' Reading Comprehension

By

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Abstract

Recently there has been a surge of interest in the use of cognitive learning strategies in SLA and their effects on other skills. This can be seen in the number of textbooks and research papers that are being developed. The study reported here addresses the use of the cognitive strategies of analyzing and reasoning and their effects on reading comprehension of Iranian EFL learners. To determine the effect of cognitive strategies of analyzing and reasoning on reading comprehension the following question is made: What is the effect of cognitive strategies of analyzing and reasoning on reading comprehension of Iranian EFL learners? Subjects of this study include 30 EFL advanced students studying New Interchange in a private school in north of Tehran. Participants were both male and female with an average of 17-25. Based on a placement test, we placed the subjects at their present level. So, subjects were randomly assigned to two groups of experimental and control group. Two tests spaced four weeks apart were given to students. The first one was an NTC's test consisting of 30 items. The space between these two tests was filled with the process of strategy instruction. The second test was a set of reading comprehension tests taken out of Barron's TOEFL that was administered to two groups. A t-test (independent sample test) was used to analyze the collected data. Result indicated that awareness of direct cognitive strategies analyzing and reasoning have an effect on reading comprehension.

Keywords: Cognitive strategies (analyzing & reasoning), reading comprehension.

1. Introduction

There has been a prominent shift within the field of language learning and teaching over the last twenty years with greater emphasis being put on learners and learning rather than on teachers and teaching. In parallel to this new shift of interest, how learners process new information and what kinds of strategies they employ to understand, learn or remember the information has been the primary concern of the researchers dealing with the area of foreign language learning (Oxford, 1989). As a result of this change in emphasis, language learning strategies (LLSs) have emerged not only as integral components of various theoretical models of language proficiency (Ellis, 1985), but also as a means of achieving learners' success in the process of language learning. Developments in cognitive psychology influenced much of the research done on language learning strategies (Williams and Burden 1997). Many researchers have revealed that the use of cognitive strategies in classroom instruction and learning is fundamental to successful learning and among the cognitive strategies analyzing and reasoning are of high importance (Oxford, 1990). Cognitive language learning strategies provide the learners with a sense of independent learning. For instance, a student may use a transient acronym to remember a chain of related words. Reading is also an important means by which not new information is learned, but also new language new language skills are required. For academic purposes reading is the best and most important source of obtaining flow of new information. But what seems to be the rationale behind the strategy investigation, is the desire to promote student's success. According to Najar (1998:2) "successful learners are good
strategy users and they are defined as knowing a lot of strategies and transferring them readily and appropriately to new setting."

**Statement of the Problem**

Educational experts, especially language learning specialists, have been trying to find solution to improve and ensure successful language learning. Educational researchers and psychologists have shown that successful learners are those active students who take charge of their learning. The prompt of this study, following these findings, was the need to investigate the effect of analyzing and reasoning as cognitive strategies on reading comprehension of EFL learners.

**Significance of the Study**

Due to a couple of reasons, this study is significant. The first reason is the role that appropriate strategy-strategy that is effective in its context of use-plays to make a successful language learner. As Brown (2001:208) affirmed "teaching methodology has seen a dramatic increase in attention to what I like to call the strategic investment learners can make in their own learning process. The second reason is related to the fact that reading seems to be the very primary source of gaining information for academic purposes in general and second language learners in particular.

**Research Question and Hypothesis**

To determine whether or not giving self-awareness of cognitive strategies of analyzing and reasoning have any effect on reading comprehension the following question is set forth:

1. Do analyzing and reasoning as cognitive strategies have any effect on reading comprehension?

Considering the above mentioned question the following null hypothesis is proposed:

NH: Analyzing and reasoning as cognitive strategies have no effect on EFL students' reading comprehension

**Limitation of the Study**

Being up to your neck engaged in tackling one problem another unwanted problem emerges. It is these problems that make a research process difficult and limited; this study has also been limited in a number of ways: first, the population of this study has been selected from a private school in north of Tehran where their educational experiences are highly influenced by their socio-economical status. Second, among different cognitive strategies only analyzing and reasoning were chosen and examined.

**2. Definitions and Classifications**

**Reading**

As is true for other language skills, reading comprehension also involves the activation of relevant knowledge. Reading is an active, rapid, and interactive process that requires decoding of material. According to Chastain (1988:217) reading is inevitably comprehension. If reader does not comprehend, they are not reading or this process is not reading. Again as Chastain (p.219) said "reading is the skill in which the student will have the greatest ability at the end of a course stressing the four language skill." It needs to be mentioned that according to Grabe (1991), one of the major advantages of reading is that students can control the speed of their activity; the psychological aspect of this advantage is so great that it cannot be neglected. It gives the reader a kind of privacy that cannot be found in other skills. The goal reading for comprehension must be a kind of problem solving task. Readers also should reach the level at which they can comprehend even at the absence of some words, the ability rooted in Gestalt psychology.

**Cognitive Strategies**

Knowledge of language learning strategies, on the other hand, is important to the learning process. Research has revealed that because of empowering students, use of cognitive strategies in classroom is useful. According to Akbarian and Talebinazhad (2003) there are various taxonomies for language learning strategies. O’Mally and Chamot divided learning strategies into three groups of meta-cognitive, cognitive and social/affective. Oxford (1990) made a distinction between two broad classes of language
learning strategies: direct and indirect strategies. Direct language learning strategies are directly applied to the language itself; indirect learning strategies, however, are those by which learners manage or control their own learning process. Considering Oxford's taxonomy, cognate strategies are categorized as direct strategies. Cognitive strategies are essential in learning a new language. Oxford (1990) stated the following:

Analyzing and reasoning strategies are commonly used by language learners. Many learners, especially adult, tend to "reason out" the new language. They construct a formal model in their minds based on analysis and comparison, create general rules, and revise these rules when new information is available. This process is extremely valuable.

Analyzing and reasoning as a set of cognitive strategies includes five subcategories as:

1. Reasoning deductively
2. Analyzing expression
3. Analyzing contrastively
4. Translating
5. Transferring

Oxford has elaborated these five strategies as follow:

**Reasoning Deductively** This strategy entails hypotheses about the meaning of what is heard by means of rules that the learner has already learned. It is a kind of logical thinking. For instance, according to Oxford (1990), Julio who is learning English hears this sentence "would you like to go to the library?" Julia recognizes that he is being asked a question because the verb comes before the subject (a general rule that he has already learned).

**Analyzing Expression** Sometimes understanding an expression in the second language requires breaking down word, phrase, sentence, or even paragraph into its component parts. This strategy is of great advantage especially in reading or listening; when learner who is encountered with complicated grammatical structures or very long word has to analyze the new expression.

**Analyzing Contrastively** Probably this is the most frequently used strategy used especially at the beginning levels of language learning. Applying this strategy, learners try to compare elements (sound, word, syntax) of the new language with that of their native language in order to determine similarities and differences.

**Translating** In fact in this strategy learner set their own language knowledge as a basis for understanding what they hear or read in the new language. In opposition to the strategy of analyzing which is more useful in receptive skills, this strategy helps learners produce new language in form of speech or writing. It is also used to produce message in form of written or oral.

**Transferring** Direct application of previous knowledge to promote new knowledge is called transferring. As Richard (1992: 386) stated it is "the carrying over of learned behavior from one situation to another. Unlike the previous two strategies which were limited to either productive skills or receptive skills, this strategy is related to all four skills.

2. **Review of Literature**

Reading is an important means by which new information is learned. Reading functions as a fruitful source for obtaining new information. According to Richard (1992) reading is "perceiving written text in order to understand its contents" (306). Grabe (1991) stated that reading is probably the most important skill for second language learners in non native speaker and academic contexts. Reading is a rapid and
Seyed Mahdi Araghi and Taleb Yari

purposeful process that requires not only knowledge of language and world, but extensive time and task also. Strategies adopted by readers while reading are of great interest not only for what they reveal about the readers' ability in comprehending the written language but also for the way in which learners, especially successful language learners, use these strategies. Chastain (1988:217) confirmed that "reading goal is to read for meaning or to recreate the writer's meaning."

Today it is totally approved that knowledge of strategies is a priceless assets because learners who have greater awareness of strategies are more successful. It has been proved that principal goal of language teacher is to equip student with a sense of what successful language learners do to achieve success and to help student in developing their individual pathway (Brown,2001). Research indicates that by choosing the best strategies for different text, it is possible for second language readers to significantly increase their reading comprehension (Nunan, 1999). According to Williams & Burden (1997) cognitive psychology has been viewed from two corners: information processing and constructivist movement. The former is essentially mechanistic and is not concerned with emotionally aspect of learning. Much of the work on learning strategies is based on such an information processing approach. Griffiths & Parr (2001) explained that "there are two main theoretical assumptions which underlie contemporary ideas on language learning strategy." First some students are more successful at language learning than others. This means that they bring varying strategies to the task. From this prospective, as Mc Laughlin mentioned "learners are viewed as being able consciously influence their own learning, learning becomes a cognitive process that is similar in many ways to any other kind of learning&qtd in ELT). Brown (2001:208) stated that "strategies are in essence, learners' techniques for capitalizing on the principle of successful learning. Brown (2000) defined strategies as specific method of approaching a problem or task, modes of operation for achieving a particular end, planned design for controlling and manipulating certain information (p.113).

3. Method

Subjects
In this study a total number of 30 randomly selected EFL students studying New Interchange in a private school in north of Tehran were invited for this study. Participants were both male and female with an average of 17-25. They were divided into two groups of control and experimental groups.

Instrumentation
Two test instruments were used in order to test the research hypothesis. The first one was an NTC's test comprising 30 items. In fact it was used to reject the possibility of differences between groups under investigation; that is, to determine the homogeneity of subjects. The second test was a set of reading comprehensions consisting of 20 questions, taken out of flash TOEFL reading test. Examples of both tests are presented in the appendix part.

4. Procedures

Pretest The two previously mentioned tests, namely NTC’ test and Barron’s reading comprehension, were used to measure the potential effect of analyzing and reasoning as cognitive strategies on reading comprehension of Iranian EFL learners. For the pretest stage, NTC test was administered between the two groups to indicate the homogeneity of subjects.

Treatment Up to now the result indicated that the two groups were just homogeneous. At this stage the experimental groups received the treatment. The procedure of presenting treatment (in this case treatment includes giving awareness of cognitive strategies of analyzing and reasoning) is described below: As Williams and Burden (1997) stated "various models (p.162). Some of these models prefer an explicit style. That is, to define the strategies and then teach them separately. This model is much more preferable
The Effect of Analyzing and Reasoning, as Cognitive Strategies, on Iranian EFL Students' Reading Comprehension

than the other ones. The assumption behind it is the fact that where learners' attention is directed to the strategy being taught, is preferred to indirect teaching where learners are not told about the purpose of task. The approach adopted here is based on the O'Mally and Chamot's model. An example of this model is presented in the appendix (3). In this way our experimental group received a four session treatment of cognitive strategy training.

Post test After giving the treatment to the experimental party, subjects of both groups were asked to read a comprehension test that was borrowed from Barron's TOEFL test. This second test was used to determine whether the cognitive strategy training was effective on reading comprehension or not. The answer is what we see in the next part.

5. Results and Discussions

Table 1. Independent sample test (T-test)

<table>
<thead>
<tr>
<th>GROUP</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRETEST</td>
<td>1.00</td>
<td>15</td>
<td>13.5333</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>15</td>
<td>14.0333</td>
</tr>
<tr>
<td>POSTTEST</td>
<td>1.00</td>
<td>15</td>
<td>14.1667</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>15</td>
<td>14.3333</td>
</tr>
</tbody>
</table>

Group Statistics

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>PRETEST</td>
<td>Equal variances assumed</td>
<td>.028</td>
</tr>
<tr>
<td>POSTTEST</td>
<td>Equal variances assumed</td>
<td>.676</td>
</tr>
</tbody>
</table>

Independent Samples T
The examination of the result indicates that there is not a significant difference between pretest and post tests. But to be as precise as possible, and to probe the null hypothesis formulated earlier in this study, the data were first tabulated as you can see here and then analyzed using inferential statistics of the independent t-test. The research question of this study was concerned with the possible effect of the two cognitive strategies of analyzing and reasoning on reading comprehension of EFL students. To this end, as Table 1 indicates, the result of pretest indicates no significant difference between the two groups. This means that (sig = .517>0.05). The result of posttest also indicates no significant difference between the performances of the two groups on reading comprehension. That is to say (Sig. = .778> 0.05). In this way the results support the null hypothesis. It means that instruction of cognitive strategies of analyzing and reasoning has no effect on reading comprehension of Iranian EFL students. In this study authors examined the effect of just two types of cognitive strategies on two small groups of students. Perhaps, for a larger number of participants or by utilizing other models (a context-sensitive) of strategy training, or simply by teaching other types of cognitive strategies associated with increase in the number of strategy training sessions, treatment would be much more effective.

**Implication and Application**

The present study was performed with the aim of shedding light on the use of two cognitive strategies of analyzing and reasoning and their effect on the reading comprehension. Although the result of this study showed no significance and proved that teaching these two strategies has no effect on reading comprehension of students, there may be some reasons for this mal-functioning or negative effect of strategy training. For example, high socio-economical status of these subjects made them so lazy and uninterested-in-learning students that hardly any method of language teaching or strategy training would be effective to them. But we all know that the topic of language learning strategies is still in its early stages of its developments and problems concerning teaching these strategies do exist. If one or more research papers lead into a negative result, it does not mean that strategy training is ineffective and we should not continue the job any longer.

**6. Suggestion for Further Reading**

This study has investigated the potential effect of just two cognitive strategies of analyzing and reasoning and their effect on reading comprehension. But the good news is that language learning strategies are so wide an area that it requires more and more research. Looking meticulously at the diagram of strategy system designed by Oxford (1990), one can easily determine the area of their interest. But as a recommendation, other researchers can examine the effect of other cognitive strategies on other skills like writing or listening.

**References**


The Effect of Analyzing and Reasoning, as Cognitive Strategies, on Iranian EFL Students' Reading Comprehension


Appendix (1)

NTC's TOEFL test

Direction: Questions 1-15 are incomplete sentences. Chose the one word or phrase that best completes the sentence.

1. Bees……display distinct preferences for different colors, but are also sensitive to ultra-violet light.
   (A) only
   (B) not only
   (C) only do
   (D) can only

2. ……. physicist, Gabriel Fahrenheit, invented the mercury thermometer in 1714.
   (A) There is
   (B) It is
   (C) The
   (D) It is the

3. Management……as the organization and coordination of an enterprise.
   (A) to be defined
   (B) it is defined
   (C) definable
   (D) can be defined

4. Jupiter …….the largest planet in the Solar System.
   (A) is
   (B) which
   (C) being

5. When sugar …….to yeast, fermentation takes place.
   (A) by adding
   (B) adding
   (C) it is added
   (D) is added

6. The overall efficiency of a system can be …….that of its weakest element.
   (A) no greater than
   (B) less greater
   (C) nothing as great as
   (D) not the greater

7. The Puritan …….percentage of the earliest settlers in Massachusetts, were a pious, self-disciplined people.
   (A) which size
   (B) a sizeable
   (C) the sizeable
   (D) that sizable

8. Deserts produce less than 0.5 grams of plant growth …….from every square meter.
   (A) the day
   (B) some day
   (C) one day
   (D) a day

9. By observing REM, or rapid eye movement,…….to know when dreaming accrues during sleep.
   (A) it is possibility
   (B) is the possibility
   (C) it is possible
   (D) then is possible
The Effect of Analyzing and Reasoning, as Cognitive Strategies, on Iranian EFL Students' Reading Comprehension

10. The Irish brought the popular custom of Halloween to America …..1840's.
   (A) into the
   (B) in the
   (C) within
   (D) during

11. At experimental agricultural stations many types of grass are grown …..various condition.
   (A) under
   (B) underneath
   (C) below
   (D) beneath

12. Nitric acid ….. copper to give off brown fumes of nitrogen dioxid.
   (A) on reaction with
   (B) reacting to
   (C) reacts with
   (D) is reacting with

13. The saturated fat in dairy food is thought of …..a factor in hart disease.
   (A) it is
   (B) to be
   (C) they are
   (D) as being

14. Robots are being used increasingly in industry as they can work on large jobs faster, are more precise and …..?
   (A) don't as easily tire
   (B) don't tire more easily
   (C) don't tire easily
   (D) don't too easily tire

15. Many plants cam grow in water, without any soil,…….. nutrients are added.
   (A) as long as
   (B) sure that
   (C) above all
   (D) of necessity

Direction: In questions 16-40 each sentence has four underlined word or phrase. Identify the one underlined word or phrase that must be changed in order for the sentence to be correct.

16. Epsom salt, or epsonite, belongs to the same class as the gem topaz.
    (A)                    (B)          (C)        (D)

17. Either the storm or the spring tide caused flooding in the Carolina coast.
    (A)                        (B)                  (C)   (D)

18. Although we are no longer young, we still enjoy to study languages.
    (A)                     (B)       (C)        (D)

19. If you have an opportunity to choose your seat in the Listening Comprehension section of the TOEFL, you choose one near the speakers.
    (A)                                (B)           (C)

20. Gemstone amber is the fossil sap off ancient trees.
    (A)        (B)         (C)        (D)
21. **Before** the 1920's, scientists **used to** think an immobilized muscle **would** become weaker.

22. **One of the first rescue methods in the space were called NOOSE-** manned orbital operations safety equipment.

23. **The ruins of Mayan cities have recent been discovered in the Mexico jungle.**

24. Breakdancing, or say "some form of dancing", can cause serious injures, **according** chiropractors.

25. Nuclear waste has traditionally **been stored** in steel drums **what are subject to rust.**

26. The immune system **is the bodies way of protecting itself against** virouses.

27. **One of Hana Claus’s experiments, a frothy ceramic, called Beerstone, was produced.**

28. **People visiting Los Angeles usually take a tour of Universal Studios, go to the Chinese theater and looking at the footprints of the atars.**

29. The videodisk has the **capacity to store thousand of** visual images.

30. **It has been discovered** that when bananas are completely ripe or cooked, they are one of the most digestion foods, and of great value **in treating** certain disease.
TOEFL’s reading comprehension tests

TOEFL Questions: Reading Comprehension

Passage-1

Questions 1-3

1. What is the author's main purpose?
   A. To describe a new cure for ear infections
   B. To inform the reader of a new device
   C. To urge doctors to use a new device
   D. To explain the use of a magnet

2. The word "relief" in the last sentence means:
   A. Less distress
   B. Assistance
   C. Distraction
   D. Relaxation

3. What portion of people would benefit from new device?
   A. One forth
   B. Half of people
   C. One third
   D. One Fifth

Passage-2

Questions 4-13

And, what is more, the concentration of alcohol in the fetus is exactly the same as in the mother. For the mother, this concentration is not a problem because her liver can remove one ounce of alcohol from her system per hour. However, the fetus's liver is not completely developed (how developed it is
depends on its stage of development). The rate at which it is able to eliminate the alcohol from the blood of the fetus is much slower. Eventually, the alcohol will be returned to the mother's system by passing across the placenta, but this process is slow. By the time this takes place, major neurological damage may have already occurred. Research has shown that as little as one drink of alcohol can produce significant, irreversible damage to the fetus. Babies born after exposure to alcohol generally exhibit facial distortion, inability to concentrate, and difficulty in remembering. Simply speaking, it is imperative that pregnant women avoid alcohol.

4. What is the main topic of this reading?
   A. Women and drugs
   B. The dangers of pregnancy
   C. The fetus and alcohol
   D. Drinking and the human body

5. In line 4 the word "its" refers to
   A. the fetus
   B. the blood
   C. the tissue
   D. the alcohol

6. In line 5, the word "pronounced" most closely means
   A. evident
   B. spoken
   C. described
   D. unfortunate

7. How much time can it be inferred that it takes alcohol to enter a woman's bloodstream after she takes a drink?
   A. about one hour
   B. a few seconds
   C. several minutes
   D. at least 24 hours

8. In line 9 the word "inextricably" most nearly means
   A. unexplainably
   B. formerly
   C. forcefully
   D. inseparably

According to the passage, how does the concentration of alcohol in a fetus compare to that in the mother?

   E. The concentration is more.
   F. The concentration is less.
   G. The concentration is equivalent.
   H. The concentration cannot be measured.

9. It can be inferred that the development of a fetal liver depends on
   A. how many months pregnant the mother is
   B. how much alcohol the mother has consumed
   C. how large the fetus is
   D. how well the mother has taken care of the fetus

10. According to the passage, how is alcohol finally returned to the mother's system?
    A. it is carried through the bloodstream
    B. it is transferred across the placenta
    C. it is expelled by the fetus's liver
11. Which one of the following was NOT mentioned as a sign of fetal alcohol syndrome?
   A. disfigurement of the face
   B. concentration difficulties
   C. increased aggression
   D. memory problems

12. At what place in the passage does the author discuss the quantity of alcohol necessary to produce negative results?
   A. Lines 2-3
   B. Lines 11-13
   C. Lines 21-22
   D. Lines 24-25

Passage-3

Questions 14-20

MARK HUGHES is a master of the fine art of survival. His Los Angeles-based Herbalife International Inc. is a pyramid outfit that peddles weight-loss and nutrition concoctions of dubious value. Bad publicity and regulatory crackdowns hurt his U.S. business in the late 1980s. But Hughes, 41, continues to enjoy a luxurious lifestyle in a $20 million Beverly Hills mansion. He has been sharing the pad and a yacht with his third wife, a former Miss Petite U.S.A. He can finance this lavish lifestyle just on his salary and bonus, which last year came to $7.3 million. He survived his troubles in the U.S. by moving overseas, where regulators are less zealous and consumers even more naive, at least initially. Today 77% of Herbalife retail sales derive from overseas. Its new prowling grounds: Asia and Russia. Last year Herbalife's net earnings doubled, to $45 million, on net sales of $632 million. Based on Herbalife's Nasdaq-traded stock, the company has a market capitalization of $790 million, making Hughes 58% worth $454 million. There's a worm, though, in Hughes apple. Foreigners aren't stupid. In the end they know when they've been had. In France, for instance, retail sales rose to $97 million by 1993 and then plunged to $12 million last year.

In Germany sales hit $159 million in 1994 and have since dropped to $54 million. Perhaps aware that the world may not provide an infinite supply of suckers, Hughes wanted to unload some of his shares. But in March, after Herbalife's stock collapsed, he put off a plan to dump about a third of his holdings on the public. Contributing to Hughes' woes, Herbalife's chief counsel and legal attack dog, David Addis, quit in January. Before packing up, he reportedly bellowed at Hughes, "I can't protect you anymore." Addis, who says he wants to spend more time with his family, chuckles and claims attorney-client privilege. Trouble on the home front, too. On a recent conference call with distributors, Hughes revealed he's divorcing his wife, Suzan, whose beaming and perky image adorns much of Herbalife's literature. Meanwhile, in a lawsuit that's been quietly moving through Arizona's Superior Court, former Herbalife distributor Daniel Fallow of Sandpoint, Idaho charges that Herbalife arbitrarily withholds payment to distributors and marks up its products over seven times the cost of manufacturing. Fallow also claims Hughes wanted to use the Russian mafia to gain entry to that nation's market. Fallow himself is no angel, but his lawsuit, which was posted on the Internet, brought out other complaints. Randy Cox of Lewiston, Idaho says Herbalife "destroyed my business" after he and his wife complained to the company that they were being cheated out of their money by higher-ups in the pyramid organization. Will Hughes survive again? Don't count on it this time.
13. Herbalife Inc is based in:
   A. Los Angeles
   B. Columbus
   C. New York
   D. Austin

14. Daniel Fallow:
   A. Was a former attorney for Hughes
   B. Was a former distributor of Herbalife
   C. Co-founded Herbalife
   D. Ran Herbalife's German unit

15. Which of the following countries is mentioned where Hughes operated Herbalife?
   A. India
   B. China
   C. Germany
   D. Ukraine

16. The complaint of Randy Cox of Lewiston, Idaho, against Herbalife was:
   A. The company did not pay them their dues
   B. The products supplied by Hughes were inferior
   C. Their higher-ups in the pyramid cheated them
   D. Hughes had connections with the Russian mafia

17. Which of the following countries is NOT mentioned in the passage?
   A. Russia
   B. USA
   C. France
   D. Italy

18. In the year in which Hughes' salary and bonuses came to US$ 7.3 million, what was the retail sales for Herbalife in France?
   A. $12 million
   B. $159 million
   C. $54 million
   D. $97 million

19. At the time when this article was written, if Herbalife had had a market capitalisation of $1 billion, what would have been Hughes' share?
   A. $420 million
   B. $580 million
   C. $125 million
   D. $500 million
Appendix (3)

O'Malley and Chamot's model of strategy training sequence

1. Preparation: develop student awareness of different strategies through:
   1. small group retrospective interviews about school tasks
   2. modeling think-aloud, then having students think aloud in small groups
   3. discussion of interviews and thinking-aloud

2. Presentation: develop student knowledge about strategies by:
   - providing rational for strategy use
   - describing and naming strategies
   - modeling strategy

3. Practice: develop student skills in using strategies for academic learning through
   - co-operative learning task
   - think-aloud while problem solving
   - peer tutoring in academic tasks
   - group discussions

4. Evaluation: develop student ability to evaluate own strategy use through:
   - writing strategies used immediately after task
   - discussing strategy use in class
   - keeping dialogue journals (with teacher) on strategy use

5. Expansion: develop transfer of strategies to new tasks by:
   - discussion on metacognitive and motivational aspect of strategy use
   - additional practice on similar academic tasks
   - assignment to use learning strategies on task related cultural backgrounds