

The Reading/Writing Connection

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Traditionally, writing and reading have been taught as two separate courses in most universities. However, reading and writing exist only in relation to each other (Cobine, 1997); they are two separate acts that are mutually dependent. As writing and reading have been found to be inter-related, separation of these language skills, may be detrimental to student performance. Writing and reading processes share a common knowledge base and have similar mental operations. Therefore, both native speakers of English and ESL college students can profit from courses which integrate academic reading and writing instruction. Technical text, compared with other types of text, is characterized by being logical, straight forward, and having a narrow range of organization styles. The teaching of writing in English from the approach of reading, therefore, is of particular benefit to science and technology college students for whom English is a foreign language in that the two processes directly reinforce each other.

Research Findings

A number of studies have reported a statistically significant correlation between reading and writing abilities (Krashen, 1984). Studies by Stotsky (1984) and Tierney and Leys (1986) have produced evidence that in the case of first or native speakers of a language "... better

writers tend to be better readers" (Stotsky, 1984, p. 16). Johnson's (1991) study of university-level ESL students suggests that the knowledge gained from reading academic texts facilitates the writing of compositions. Wells (1993) proposes that writing while reading can help students learn to organize their thoughts. A study by Qian (1990) revealed that combining reading with writing contributes to a wider range of both quantity and quality of revisions to writing than does writing without reading.

It is interesting to note that writing and reading do not equally influence each other. While additional writing instruction and practice may improve writing, they may not improve reading (Stotsky, 1984; Krashen, 1984). Study or additional writing practice with reading experiences was as beneficial as or more beneficial than grammar study or additional writing practice. Stotsky concludes: "It is possible that reading experience may be as critical a factor in developing writing ability as writing instruction itself" (1984, p. 17).

The Relationships Between Writing and Reading

The audio-lingual theory of language learning hypothesizes that language is learned through a receptive mode (listening) and then transferred to an expressive mode (speaking). Following this line of reasoning, the model is extended to the transfer of learning between reading and writing. Students first, through reading, acquire an understanding of how authors present their ideas using English language writing conventions. They learn to identify and understand

standard patterns and relationships between words, sentence structures and larger parts of texts and to identify the logic behind writers' selections of organizational styles. This fundamental knowledge serves to enhance the students' ability to read English with greater comprehension, ease and speed. Students can then use the knowledge they've acquired through reading texts written by others to express *their own* ideas in writing.

Although the methods of communication differ: speaking and writing; listening and reading, the modes are the same--expressive and receptive. In both cases, following prescribed grammatical, structural and organizational conventions are essential for clear, concise and meaningful communication to take place. Charts 1 and 2 illustrate the complementary relationship between reading and writing skills.

In addition to being inter-related at the skill level, reading and writing share a common knowledge base and have similar mental operations at the process level, as well. This means that readers and writers predict, analyze, infer, and evaluate while reading and use their experiences and embedded textual cues to give meaning to the text. They also perform the same activities of planning, drafting, aligning, revising, monitoring, and checking outcomes. Furthermore, after readers and writers have completed their texts, they both engage in reflective thinking (Qian, 1990). It follows, therefore, that compared with learners who *do not* combine reading with writing, learners who *do* are likely to be more easily guided to write text that will similarly inform and interest readers.

Chart 1

Reading Skills*identify*

- the thesis of the text
- the main ideas (topic sentences) of the text
- supporting details
- the organization style of the text
 - description
 - chronological sequence
 - classification
 - cause and effect
 - analogy and contrast
 - argumentative and logical

adapt

- reading strategy according to the organization style of the text

understand

- relations of words within sentences (structure)
- the meaning of the ordering of pictures
- the data in charts and graphs

recognize

- the various devices used to create textual cohesion (ie. paragraphs, headings, italics)
- reference words (ie. nominalization, comparison, or previously-mentioned element)
- linking words (ie. therefore, first, finally, however)

compare

- texts and graphics
- related texts
- related graphics

assess

- fact vs. fiction
- the writer's intention

Chart 2

Writing Skills

state

the thesis of the text

determine

the audience that will read the text
the most appropriate style to organize content
description
chronological sequence
classification
cause and effect
analogy and contrast
argumentative and logical

organize

the main ideas (topic sentences) of the text
support writing details

include graphics that will enhance understanding

pictures
charts, graphs, diagrams

use correctly

sentence structures
the various devices used to create textual cohesion
(ie. paragraphs, headings, italics)
reference words (ie. nominalization, comparison,
or previously-mentioned element)
linking words (ie. therefore, first, finally, however)

explain the relationship between

texts and graphics
related texts
related graphics

distinguish between

fact and fiction

Sample Reading/Writing Activities

The final section of this paper consists of seven sample activities that are used, with positive results, to teach writing to some of the students of the Faculty of Computer Science and Systems Engineering of Kyushu Institute of Technology. The texts are excerpts from textbooks and newspapers. Prior to each activity, students receive related instruction and practice designed to prepare them to complete the objective. The activities are arranged in developmental order.

Activity 1

Objective: Students will *identify the topic and topic sentence* of paragraphs selected from textbooks and newspapers.

Task: Write a topic for, and underline the topic sentence of the following paragraphs.

1

correct answer:

What causes acid rain? Acid rain is caused by the release of sulfur and nitrogen gases into the air. Sulfur and nitrogen gas combine with water vapor, and fall to the earth as acid rain. The gas that forms most acid rain is sulfur dioxide. Coal, gasoline, and oil contain sulfur. These fuels are burned for their energy.

some acceptable topics:

Acid Rain, The Causes of Acid Rain

2

correct answer:

In addition to the physical effects caused by the destruction of the rain forests, there are social and economic effects as well. The Amazon forests contain many of the world's rubber trees, which are a major

source of income for people living in the area. These people would have to find other ways to make a living if the forests disappeared. An even more serious consequence is the introduction of previously unknown diseases, such as malaria, into the region. Poor people who cannot easily get medicines often have no protection against these diseases. In addition, native peoples whose tribes have lived for centuries in the area are now being forced to move to escape disease and to find new sources of food as the forests disappear. However, many of the native peoples are hunters and gatherers who are unable to change their way of life. They cannot find food in the areas where they must live. The result is that these people are dying from disease and starvation, and their cultures are vanishing.

some acceptable topics:

The Destruction of Rain Forests The Effects of Destroying Rain Forests
Consequences of Damaging Rain Forests

Activity 2

Objective: Students will organize a group of given sentences into a logical order, and state their rationale for their answer.

Task: Put the following sentences into a logical order that will form a well-written paragraph.

acceptable answers:

a. Workers Poisoned by Gas

- 4 1. This is nothing new.
- 2 2. Local health officials found that there were not enough safety standards in the factory.
- 1 3. More than fifty workers at a liquid crystal factory in China have been poisoned because of breathing gas for many months.
- 3 4. China's desire for rapid development has caused the number of industrial accidents to increase.
- 5 5. Employers want to receive as much profit as they can.
- 6 6. Historically, many employers of newly industrialized nations have not been concerned about improving employees' working conditions.

b. Workers Poisoned by Gas

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- 1 3. More than fifty workers at a liquid crystal factory in China have been poisoned because of breathing gas for many months.
- 3 4. China's desire for rapid development has caused the number of industrial accidents to increase.
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- 6 6. Historically, many employers of newly industrialized nations have not been concerned about improving employees' working conditions.

Activity 3

Objective: Students will identify transition words that are used as transitions between sentences, ideas and paragraphs.

Task: Underline the transition words in the paragraphs, below.

correct answer:

Agriculture is a clear example of an important industry that is getting smaller. In 1860 40.6 percent of the U.S. labor force worked in agriculture, but this figure was only 2.1 percent in 1980 (Bell, 1983).

Another example is the steel industry. Some products that have been made of steel are now being made of other materials such as class, plastic, concrete, and paper. Drucker also points to the auto industry, which is still growing. Soon, however, it will reach its limits and start to get smaller.

correct answer:

Second, and most important, we must now seriously question the validity of the depletion approximation. To begin with, it is easy to see that it is not a self-consistent approximation. If we use the potential distribution based the depletion approximation to determine the mobile-carrier densities within the space-charge region, we find that they do not vanish. In fact, there are appreciable regions within

the space-charge region that contain non-negligible amounts of mobile carriers, even in equilibrium.

Activity 4

Objective: Students will write their own paragraphs, using transition words studied in class.

Task: Write a paragraph using at least 4 different transition words.

Activity 5

Objective: Students will identify the main parts of a given text.

Task: Write an outline for the text, below.

How a Thermostat Works

A thermostat turns a heater on and off to keep the temperature constant.

Many machines that heat things need a thermostat. Irons, electric kettles, water heaters and cookers all use thermostats, because they work at a certain temperature.

Like the thermostat control of a heating system, these thermostats usually contain a strip made up of two layers of metal fixed together. When the strip gets hotter, the first metal expands more than the second metal. This uneven expansion causes the strip to bend. The controls on the thermostat are set so that the strip bends and operates a switch to cut off the heating system at the required temperature. Then as the room cools, the strip unbends and causes the switch to move back and cut in the heating system.

correct answer:

How a Thermostat Works

- A. Definition of a thermostat
- B. Machines & appliances that use a thermostat
 - 1. examples
 - 2. reason
- C. How a thermostat functions
 - 1. materials
 - 2. sequence

Activity 6

Objective: Students will write an outline for an essay they will write on a topic related to a text they've read.

Task: Make an outline for an essay you will write on the topic of the article you've just read. The outline must have at least four main points.

Activity 7

Objective: Students will use an outline they've made to write an essay.

Task: Using your outline, write an essay.

Caveat: Activity 6 is very difficult for most Japanese students. They typically attempt to do the assignment two or three times before being able to do it correctly. This is because they are reluctant to 'let go' of the reading model and formulate personal ideas, and opinions. Therefore, the teacher must devise ways to help them discover their own ideas, opinions and feelings and tap their knowledge reserves. Needless to say, this requires much creativity and patience on the part of the teacher.

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