

Materials Design for First Year Science Students at Chiang Mai University

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This paper is concerned primarily with the reading-writing materials designed for first year science students at Chiang Mai University and the factors affecting the design. The materials will be used experimentally during the first semester of this coming academic year (June 1978-9). Therefore, the results of the use of these materials are not yet known. Formerly, EST courses were offered only for second year science students and all of the science freshmen had to take the general English courses. From our experience, switching from the general English courses taken during their first year to EST courses during their second year has been very difficult for the students. This is probably due to the different nature of the courses; that is, general versus scientific English and perhaps also the level we are trying to reach by the end of the second year. Because of this, we consider it more appropriate that EST courses, English 191 and 192, be offered for all first year science students.

Factors affecting materials design

1. Course organisation :

1.1 Course components: The courses are intended for student practice in the four language skills: listening, speaking, reading, and writing. However, since the tasks required of college students are reading and writing, (they have to read texts in their specialist field and write short reports) it is considered that students at this level will need more practice and training in reading and writing. Therefore, while classroom activities comprise the four language skills, special emphasis will be placed on reading and writing.

1.2 Time tabling: There will be three classroom periods per week, with an addition of one listening laboratory every two weeks. Each period lasts 50 minutes. The students are also assigned to read one supplementary reading passage a week as homework.

1.3 Student population: It is expected that 1,100 first year science students will enroll for English 191. Out of this number, approximately 100 - 150 students

will be exempted. Students exempted English 191 will have to take English 192, while those exempted both 191 and 192 will go on to take English 291 - an English course designed for the 2nd year science students.

2. *Writing of Materials*

The problems which have arisen so far during the preparation of the materials are :

2.1 Limitation of time: The time allotted for preparing materials is very limited (from November 1977 to June 1978). The materials are expected to be operational in June 1978.

An informal meeting among those who are involved in developing the materials is held every two weeks to discuss the work in progress so far in terms of appropriateness of the materials as well as difficulties arising. During the meetings, the syllabus that has been set up is brought into consideration to see if any changes need to be made. So, although the syllabus has specified the materials design, the production of materials has also influenced the syllabus.

2.2 Teachers' heavy load: The teachers who have been involved in the materials preparation have at least a 12 hr/wk teaching load. Besides their teaching job, some of them are also acting as student advisors or are responsible for departmental duties. If their teaching hours could be reduced, the teachers would have more time to spend on writing materials. However, we think it is important to get the materials written so that we may benefit from the feedback from students and from the criticisms of other institutions.

2.3 Suitable reading passages: Our criteria for choosing passages include length, level of difficulty, interest and coverage of the teaching points stated for each unit. We have in fact been able to find passages although it is time-consuming.

2.4 Scientific background: Teachers are often reluctant to teach scientific English and especially to prepare materials because they feel they do not know enough about science. This has not been a great problem as the first year materials are not so difficult and reference books and subject specialists can be consulted.

3. *Course Objectives*

The course is intended to be basically self-instructional. It is proposed that on completion of the second year courses the students should be able to read their textbooks with full comprehension and to write acceptable scientific English.

To help students towards such objectives, in the first year it is realised that the types of exercises provided have to be carefully prepared. Such questions as what kinds of exercises will help students to read and write English should be brought into consideration.

In the writing section, it is expected that the students will be able to gain experience in producing discourse consisting of simple sentences, complex sentences, and short paragraphs respectively. We feel that the writing section is important not only as a way of practising writing but also as a way of improving skills. The writing section is concerned with language related to scientific concepts, for example the structure of things, and with expressing certain functions, for example making classifications.

In the reading section, the students should be able to develop competence in such areas of reading as extracting information from texts, identifying various scientific styles of writing, using scanning and skimming techniques, and so forth. We have chosen passages related to the concepts and the functions in the writing section and have tried to include exercises to practise various reading skills. Figure 1 shows the organization of the writing and reading sections.

Reading/Writing lessons

WRITING			READING		
CONCEPT		FUNCTION	passage I	passage II	passage III
ORAL introduction	controlled writing	controlled writing			

The sample writing/reading unit

English 191 Unit 3: Structure

Lesson 2: The connection between parts

Objectives: To describe the connections between the parts of objects.

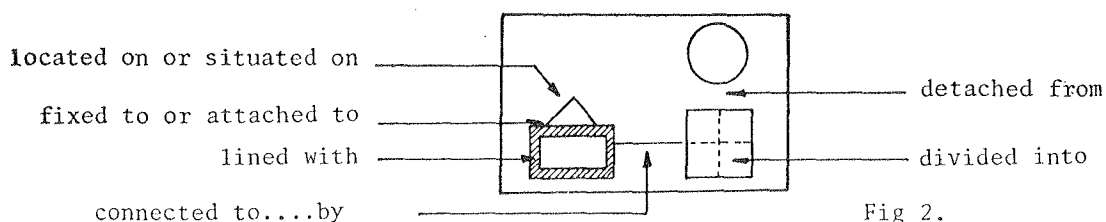


Fig 2.

Fig. 2 is a sample diagram which is used as a way of introducing vocabulary and structures concerned with the concept practised in lesson 2. The diagram is used for oral practice at the beginning of a class period.

Section 1: *Writing*

I Study Fig. 2. which shows the connection between parts. Now label the diagram:

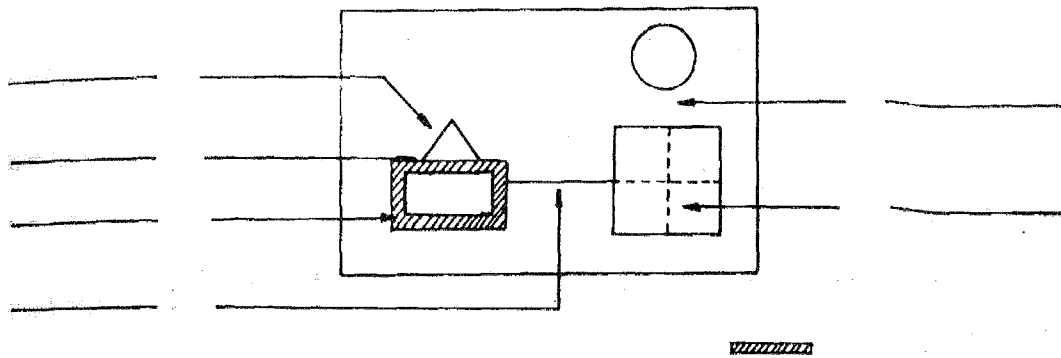


Fig 2.

Describe Fig. 2 in relation to the box, using the words you have just supplied :

Example : The shapes in Fig. 2 *consist of* a triangle, a rectangle, a square, and a circle.

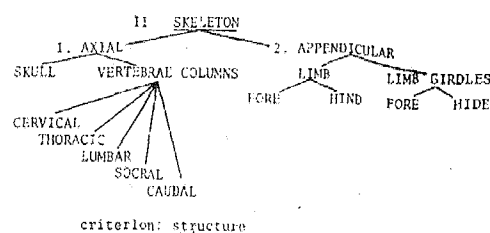
The triangle, which is on the left of the diagram, is fixed to the rectangle.

Now begin your exercise :

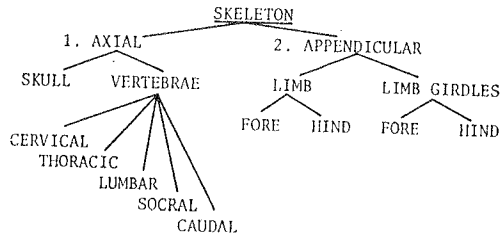
- a. _____
- b. _____
- c. _____
- d. _____

The purpose of the first part of the writing section is to help the students learn certain vocabulary and structures related to concepts stated for each unit. In this section we use diagrams to provide written requirement and to control the sentence and paragraph writing.

The skeleton is divided into two main sections, the axial skeleton and the perpendicular skeleton. The axial skeleton consists of the skull and the vertebrae column regions. These regions are subdivided into cervical, thoracic, lumbar, sacral, and caudal vertebrae.



Now study the classification diagram, read the first part of the description and complete the second part in the same way.

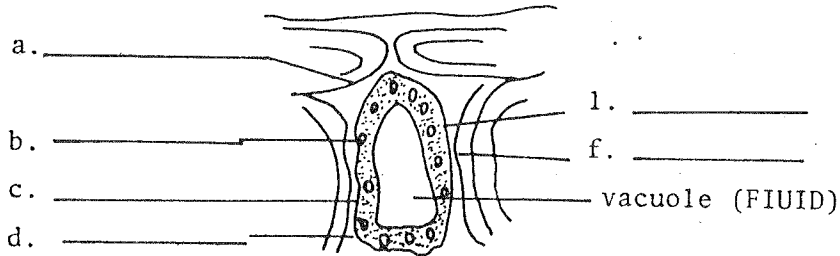


The second part of the writing section concentrates on a particular function. The exercises are aimed not only at practising sentence structure but also at giving students one or two simple ways of expressing this function.

Section 2: Reading

1. What is the topic of the paragraph? _____
2. What lines the inner surface of the cell wall? _____

This paragraph describes _____



The outer layer of a plant/is called/the cell wall. The inner surface of the cell wall/is lined with/ a layer of protoplasm. The nucleus/is embedded in/ this layer. The protoplasm which surrounds the nucleus/is called/ the cytoplasm. The cytoplasm sometimes contains chloroplasts. These are small bodies composed of protein. The surface of the cytoplasm is covered with a cell membrane. The centre of a plant cell consists of a cavity called the vacuole. It is filled with fluid. The walls of the plant cell are often joined to other cells which surround it. The linin between the walls of two cells is called the middle lamella.

this layer =
 These =
 It =
 which =

3. Where are the chloroplasts contained? _____
4. What is the vacuole? _____
5. Now label the parts and composition of a plant cell in this diagram using the following words:

- | | | |
|----------------|-------------|-------------|
| middle lamella | chloroplast | (cellulose) |
| cell wall | nucleus | (fluid) |
| vacuole | cytoplasm | (protein) |
| cell membrane | | |

6. Mark 4 definitions in the passage.
7. In the first four sentences the main verbs are marked. Do the same for the rest of the passage.

The reading section is designed to reinforce the writing section. Before each reading passage, scanning and skimming questions will be given to train the passages without stopping and also to extract particular information required. Vocabulary and reference exercises are included at the side of the passage. At the end of the reading material the students will be asked to annotate the passage for function, for example definitions, as a preliminary step to notetaking and also sentence structure as well as to answer information questions or questions which require inference.

4. Testing

During each class period, the self-instructional materials will provide the students with an opportunity to evaluate their own achievement by themselves. The students will also be able to correct their own exercises by checking their answers with the key provided at the end of each unit. At present we do not know whether self-evaluation will be appropriate for students at this level.

A formal evaluation will be given as a test after each unit is finished. The test will comprise an unseen reading passage with questions related to the specified objectives of each unit. The students will also be asked to write sentences or a short paragraph related to the writing section.

The given tests are intended to evaluate the students' achievement in terms of the objectives of the course. The problem remains of making sure that achieving the course objectives does actually help the students to read their textbooks and to write scientific English.

As prerequisite of the second year courses, the training and practising of the skills set forth in English 191/192 will hopefully better prepare the students so that they will be ready to take the more advanced courses.