The Reading Programme at King Mongkut's Institute of Technology (Thonburi)

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1.1 At KMIT (Thonburi) we are dealing with relatively small numbers of students, about 400 in the compulsory first year course, and 100 in the optional courses. However, the project there is of national significance, for the English needs of KMIT (Thonburi) are typical of tertiary technical institutes throughout Thailand, and the approach we have taken to fulfil these needs, the adaptation of commercially available text-books, is an approach that might usefully be copied throughout the Kingdom. Indeed, in our approach to solving the problems of KMIT, we have had to bear in mind the possible wider implications of our work.

1.2 KMIT (Thonburi) is a more typical Thai college than other centres for British Council sponsored ELT projects, at Chulalongkorn and Chiengmai Universities, DTECLI, and AIT. KMIT uses Thai language exclusively as a means of instruction and needs English principally as a means of access to knowledge and as a vehicle for the transfer of Technology. Its human and financial resources are too limited to create materials that are tailor-made for its needs, every few years. Its teaching is classroom-based, and its teachers, who are non native-speakers, while willing and able to use new teaching materials, are confused by the multiplicity on the market, each promising miraculous means to the mastery of English. Finally, KMIT students come from every part of Thailand, they have wildly varying ELT backgrounds and they are neither cream nor dregs.

1.3 Reading is the most necessary and commonly used skill in English for students at KMIT (Thonburi), where students do most of their required reading of English :-

In the Library :

- searching for sources of technical information ;
- seeking details from located sources ;
- trying to evaluate the information they acquire.

In Class :

Interpreting questions on Mathematics, Physics etc. taken from English textbooks on these subjects.

In Labs and Workshops:

Understanding printed instructions and manuals.

Other *minor* Reading Activities on campus will include the reading of newspapers, magazines, etc., mainly looking for jobs.

Any successful Reading Course will take into account these current Reading requirements and build upon them. Student motivation will be improved if the lessons are clearly connected to their daily needs.

1.4 With this in mind a suitable course description might read like this.

Reading I

The goal will be to teach students to read non-fiction texts of up to 800 words, on hard science or technical subjects, with comprehension and at a speed of 30 words per minute.* The texts will be slightly modified versions of technical texts used on campus and will include illustrations of many kinds.

Reading II

Prerequisite LS. 211

The goal will be to teach students to read authentic nonfiction texts of up to 1,000 words on hard-science or technical subjects with comprehension and at a speed of 50 words per minute.* The texts will be unsimplified extracts from technical texts used on campus and will include illustrations of all kinds and complexity.

1.5 However, students entering KMIT have many bridges to cross before they can benefit from such a course. They have serious problems at the word and sentence level in the use of English language for any purpose, and little control of their reading behaviour.

1.6 Consequently, the following Intensive English course was devised which would tackle their inability to handle meaning in areas important to them, and would, later, coach them in the rudiments of reading.

Intensive English - Course description

The course goal is to improve the student's ability to gain knowledge from English language sources of information in his own field of science or technology.

LS. 101 *Intensive English I*

The emphasis is on the reading and listening skills, up to paragraph level. Concentration is on the vocabulary, word clusters and structures typical of EST, in subject are as common to science and technology:- the properties, shapes, structure and location of objects, materials etc.; *process;* cause

*Reading speed includes time for re-ordering the material to take notes or write paraphrases.

and effect etc; *measurement:* quantity, proportion, frequency, probability etc.

LS. 102 *Intensive English II*

Again, reading and listening are emphasized but now the length of passage is extended to between 300 and 600 words. The ability to read and listen intensively and extensively for different purposes, and to analyse the rhetorical purposes of spoken and written discourse is developed.

2. Adapting Commercial Texts

2.1 It was felt that the widest application could be made of our work by selecting and adapting commercially available texts. After careful scrutiny, *Nucleus for General Science*[1] and *Focus on Workshop Practice*[2] were chosen.

2.2 It was decided to adapt these to our needs in systematic ways which could be transferred, if necessary or desirable, to other texts at some future date.

2.3 The advantage of this decision, on a national scale, is that these and similar texts are available to anyone-and so are the systems by which they may be adapted. Once these systems have been learned, they can be applied to many texts in a wide variety of circumstances.

3. The Listening and Speaking Components in the Reading Course

3.1 It was decided to use '*Nucleus for General Science*' as the main text in the first semester, because it is pitched at the right level of difficulty for most new students at KMIT and it deals with areas of communication and meaning vital to EST, such as Measurement, Location, Probability, Cause and Effect, etc. In doing so, we accepted the validity of the work that had gone into developing the 'Nucleus' materials by a team of British experts at the University of Tabriz, Iran.

3.2 The fact that it involves the students in a lot of stimulating and relevant group activity outweighed our doubts about it not being designed specifically to teach reading.

3.3 Indeed, we decided to expand its oral basis by creating supplementary materials in the form of Oral and Listening rather than Reading exercises as such. There were many reasons for this unexpected approach.

a) Most of the important aspects of textual cohesion and coherence can be taught by means of classroom tapes.

b) The intellectual problem of listening for understanding by building up meaning from cues, is similar to that involved in Reading.

c) Tapes, too, allow the words to be scanned repeatedly, as in reading, and according to Wilga Rivers, are a good way to speed up the ability of students to evaluate reading cues.

d) We expected, under these circumstances, cross reinforcement of skills to take place.

e) The tapes went some way towards fulfilling KMIT students' repeated demand for 'conversation with foreigners'. The tapes provided stimula ting oral interchange within the classroom with a variety of native speakers.

f) And finally, a very practical point, the tapes allowed the new Adviser to support every teacher everyday in the class.

3.4 The system was highly flexible. Each teacher had her own tape recorder and a set of tapes, and was at liberty to select the parts she thought best for her classes.

3.5 The exercises took the following form:-

a) *Practice in recognition*: where students are asked to identify and repeat words with particular functions.

b) *Relating*: noticing the relationship between nouns and qualifying adjectives, verbs and their subject nouns etc.

c) *Inference*: inferring corollaries, implications of phrases with 'too' and 'enough', etc.

d) *General/particular*: identifying general and particular statements, topic and summary sentences etc.

e) *Meaning*: synonyms, antonyms etc.

f) *Following instructions:*: drawing diagrams, histograms etc., labelling diagrams from spoken information, following directions etc.

g) *Reference*: identifying the links between particular pronouns, demonstratives and noun phrases etc.

h) *Traditional comprehension*

3.6 We selected the language items and topics for our supplementary exercises on the following bases:

a) Our exercises simply reinforce the language lessons that 'Nucleus' attempts to teach, e.g. ways of describing shapes and the position of objects in relation to each other. An exercise which demonstrates this point appears in the paper by my colleague Ajarn Nuanthip, (p.)

b) Topics were selected to complement those used by the textbook.i.e. where the text applied the language item only in a scientific context, we used it in general situations familiar to students, like Transport, and vice-versa.

4. The Reading and Writing Components

It was decided to use the Focus series for the second semester, the particular text selected being 'English in Workshop Practice'. This book

is a suitable complement to 'Nucleus' in that it provides exercises in the comprehension of reading passages of between 150 and 600 words, modified passages graded in length, complexity of structure, and content.

It further complements 'Nucleus' by providing a grammar review,* and by teaching the rudiments of discourse analysis–exemplification, generalization, definition, etc.; and the active reorganization of information into notes and diagrams (semiotic encoding).

5. An Ideal Reading course in EST

5.1 On arrival at KMIT, most are not able to begin reading authentic texts, So some system had to be devised which presented the learner with authentic texts introduced in easy stages.

5.2 It was decided to use the Jones/Roe[8] Reading Comprehension module to create adaptive material for 'Focus'. Jones & Roe, who recognize authentic texts as 'the source of the learner's problem', describe their module as, 'Representative of the first stage of a three-stage set of materials for comprehension practice that would be supplemented by a *source book* of explanations and exercises to do with rhetorical strategy and semiotic encoding.'

5.3 'Focus' took on the role of source book for the purposes of our approximation to the module.

5.4 Details from one unit of 'Focus' are presented in the paper by my KMIT colleague Ajarn Rasamee. The following is an outline:

In the module, *before* the target text is presented, the student is prepared for it by three Learning Aids:

a) A Concept Diagram (C.D.) of the text.

b) A set of questions which can be answered from the C.D.

c) A paraphrase of the passage printed in a special format to show the interdependence of ideas within it.

The final part of the module, presented *after* the text is thoroughly studied, is

d) A cloze test which is used to assess student progress and diagnose types of error.

5.5 We found this module to be highly promising. Any disappointments there were came largely because we were attempting to graft elements of it on to a text ('Focus') which was not designed as the source book in the specification. To a large extent the success of the module will depend upon the source book, the nature of which we shall look at in section 7.

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* Indeed, both Nucleus and Focus usefully reactivate structures and vocabulary rehearsed many times previously by students, but maintain student interest by focusing on areas of meaning relevant to their study needs.

5.6 Meanwhile the module provided unexpected benefits that must be mentioned. Creating and working with the Learning Aids in 5.4 proved to be a superb exercise in teacher training. These aids allowed us to avoid the classic traumas of switching from ELT to EST by giving the English *teachers* the means of grasping fundamental technical information in easy stages.

Indeed, after some curiosity had been aroused and confidence established, the teachers themselves took to *creating* the Learning Aids for the latter Units of the book.

This led to the greatest benefit of all. When problems arose that could not be answered within our department, we organized visits to workshops and labs in search of solutions. Demonstrations of the use of tools and instruments were arranged and the staff, carefully studying their C.D.'s beforehand, were able to ask complicated, relevant questions of the technical instructors. Since that time, an easy liaison has existed between our staff and the teachers of Science and Engineering, who provide us with realia and know-how on technical matters when these are relevant in the English class.

5.7 The value of working with a model is that it can be repeatedly adjusted in the light of experience. We now feel it highly likely that the module would be more completely successful with advanced courses on Reading where source books incorporating the ideas in Section 7 would be specially written. The staff's familiarity with the module will be of great value in creating such courses in the future.

6. Motivation of students

6.1 Here a word of caution is necessary. No book or course, however perfect, will succeed unless it takes account of student motivation. J.P. Pandidu[4] is correct in saying that science and technical students especially are least of all interested in ritual education. They must be 'constantly aware that what they do is relevant and beneficial to them.

6.2 Teachers must often be prepared to explain the underlying objectives and goals of some work in the English class where the training value is not obvious. KMIT staff have to do this with the acronymic paraphrases mentioned in 8.3 and cue exercises in 8.4.

6.3 Technical students also expect practical outcomes from their work. If practical projects that involve the students' expertise can be devised, they will work all the better. Pandidu quotes some examples of this, one where students were asked to read trade journals and write reports justifying their selection of loud-speakers for a P/A system on their campus. In another, students had to readr information on car repairs and pass a test on it to

qualify for taking part in a specially organized Delhi to London Car Rally! In both cases, students put their hearts and souls into the reading.

6.4 Motivation, then, will frequently depend on factors outside books, classrooms and campuses. Projects of the kind mentioned above should, ideally, be an element in every EST course. At KMIT (Thonburi) we have asked each department to supply us with a list of 5 possible student projects of that kind, plus relevant bibliographies. Departments whose projects are selected will provide us with consultants. One project is already complete: five electrical students built a multi-listening cassette player for the English Club, using an English instruction manual.

6.5 Another motivating factor will be whether the course will help the student to find a job. Consequently we have begun to circularize all employers who advertise for Science or Engineering graduates with 'good spoken and written English,' to find out exactly for what purposes they would expect their employees to use English. With this information, we hope to improve student motivation by creating courses that match the demands of prospective employers.

7. An Ideal Reading Programme for KMIT

An ideal way of teaching reading to students of Science and Technology then, will involve many of the elements in our course, plus some others:-

7.1 Group Aural/Oral Classroom activities such as:

a) Taped exercises with practice in: recognition of words with particular functions, and of relationships between particular words; reference; inference; identification of rhetorical functions; the labelling and drawing of diagrams, graphs, etc. from spoken instructions; and traditional comprehension.

b) Combining Arrangements.[5]

c) Communication Games.[6]

7.2 Partially Self-Instructional Materials such as:

a) The completion of partly-filled Concept Diagrams outlining the relationship of ideas in an accompanying passage.

b) The asking and answering of questions relating the Concept Diagram to the passage.

c) The use of an acronymic summary of the passage, for reading and reorganization.

d) Most importantly, the completion of a random cloze test involving the reconstruction of the passage, by means of coaching on the use of cues, systematically presented in the form of cue sheets.

7.3 A Self-Instructional Tutor-Text on Reading, involving:

a) Materials in the forms listed in 7.1 and 7.2 above, with accompanying Answer Sheets.

b) Comprehension questions with multiple-choice answers, each answer followed by a page reference where right or wrong is indicated and an explanation given.

c) Word-formation exercises; suffixes, affixes etc.

d) Coaching on Reading Techniques for different purposes*, such as skimming for particular information, scanning to locate sources of information; intensive reading, etc; and reading strategies like SQ3R[7]. (Survey, Question, Read, Recite, Review).

7.4 The programme will cover at least two years.

7.5 The ideal source-book for the Jones/Roe module will incorporate both 7.2 and 7.3.

8. Outcomes at KMIT (Thonburi)

Accordingly, we have made the following adjustments in the module, which basically was short of activities for students to perform.

8.1 Instead of students reading the Concept Diagram as a preparation for the passage, in the later Units of 'Focus' we now ask them to read the passage along with a partially completed C.D. and to complete the C.D. from information in the passage. i.e. to *gain an immediate overview* of the discourse and actively *reorganize the information* they read.

8.2 Instead of merely answering questions from information shown in the C.D., they are asked to *formulate questions* and answers from the C.D.

8.3 Exercise 3 of the module asks students to read a paraphrase of the target passage, printed in a special way:

a. most important sentences on the left

b. technical words in capitals

c. anaphora as acronyms

d. acronyms in brackets beside referents

Initially that exercise is challenging enough, but later the students can be asked not only to read, but to *organize* the paraphrase according to a, b, c, and d.

8.4 We continue to use the final cloze test for its original purposes - to check student progress and to diagnose areas of difficulty through error analysis. But now in addition, we use that test as a teaching device. Students are presented with 'cue sheets' immediately after the test and are asked to

* This will involve creating a taxonomy of the Reading micro-skills required by a Tertiary level student of Technology.

write on these sheets the cues which led them to fill the blanks in the test as they did. First of all, this is done as group work on the first half of the test, then as individuals.

It proved to be rather a clumsy device applied crudely in this way. Using the cloze test itself, every item of it, was tedious and unnecessary. So a number of adjustments were made.

a) A *selection* of the items in the test will be made, up to a maximum of ten. Cue sheets will be used in this way with only one Unit.

b) Thereafter, for two further Units, *unseen* passages will be used to make cue lessons. First a cloze test will be given on this unseen passage, then a selection of the items will be made into cue exercises.

The purpose of this exercise is to train students to seek meaning from context. It merely formalizes a system that many of us have used casually in the classroom.

Generally, the exercise makes the point to student that reading is a 'psychological guessing game'. Specifically, it points out that there are grammatical and semantic clues to meaning; and, by making students locate their cues, it forces them into the healthy reading habit of *scanning backwards and forwards in a discourse* when seeking meaning from context, i.e. it will help to widen the students reading focus.

9. Individualized Reading

The module can be made more flexible by incorporating some extra self-instructional material for the better readers composed of unadapted, authentic texts.

9.1 These Extension Reading Exercises are introduced at the cue sheet stage of our units. Those who have scored well in the test have few cue blanks to complete and so they have time to move on to Extension Reading while the others work on the cues.

9.2 We have so far confined ourselves to a single topic, Solar Energy,[8] in making these exercises. This is a vast and fascinating subject, of inter-disciplinary interest, and KMIT (Thonburi) has recently founded a post-graduate Faculty of Energy which means that there are many SE appliances dotted around the campus.

9.3 Attempts to individualize this material by giving it to the better students only have met with resistance, Thai students believe that everyone should get every handout. So far we have complied with this, hoping that the slower students will do the extension exercises as extra homework.

10.1 These exercises, which are still at a very early stage of development, will be designed to give practice in the following:

- reading for different purposes, with the purpose clearly stated in terms the student will understand;
- reading at different speeds;
- using various formulae, like SQ3R.

10.2 They will also incorporate various useful pieces of information about reading.

e.g. - the fact of language redundancy.[9]
- the need to read in phrases to determine meaning,[10] etc.

11. Final Adjustments

Feedback from teachers, given at the weekly meeting of our Working Party, has led to the following suggestions for adjusting our Intensive Courses.

11.1 The selection, in the light of our classroom experience, and on the basis of a Pre-test designed for the purpose, of only the most relevant and effective parts of 'Nucleus' and 'Focus', and of our own materials.

11.2 The introduction of 'Focus in Physical Science' for students of the Science Faculty in Intensive II.

11.3 Balancing the skills in both semesters: i.e. more Reading in Semester 1 and more Oral/Listening work in semester 2. This will mean redistributing material we already have.

11.4 Using continuous assessment for 20% of the course marks to benefit those who work hard in the class.

12. Conclusion

No doubt the system of operational-research-cum-teaching at KMIT (Thonburi) will throw up many more problems and suggested solutions. The cycle is likely to be endless; but at least the cycle now is part of a system and we are learning to make use of it to our advantage. We will never evolve a perfect Reading Programme, but, over the years, through the flexible system of feedback and adjustment, our approximations will creep closer to that goal.

References

1. Martin Bates and Tony Dudley-Evans. *Nucleus–English for Science and Technology: General Science*, London : Longman, 1976.

2. Alan Mountford *English in Focus–English in Workshop Practice.* London : Oxford University Press, 1975.

3. Keith Jones & Peter Roe *'Designing EST Programmes in Academic Settings for Overseas Students'* ETIC Occasional Paper April 1975.

4. J.P. Pandidu 'Development of motivation in the learner towards reading Technical English' RELC 1974.

5. I.P.S. Nation 'Combining Arrangements' Modern Language Journal' 76. University of Wellington.

6. A.S. Palmer 'The use of communication games in teaching of reading' RELC July 1974.

7. Alvin Kravitz 'Teaching the essential reading skills in Social Studies' in Figurel. J. Allen (ed.) 'Forging ahead in Reading' Newark, Delaware International Reading Assoc, 233-8 1967.

8. Using extracts from Denis Hayes 'Energy : the Solar Prospect'

9. J. Morton (1966) in Nature showed that this increased reading efficiency because students realized it was unnecessary to read every word.

10. N. Chomsky (1965) 'Aspects of the Theory of Syntax' Cambridge, Mass. MIT Press. Here Chomsky argues that the first process in analysing a sentence is to determine the surface structure of the sentence which includes the phrase boundaries, and onty then is the 'deep structure' or 'meaning' determined.

See also :

1.M. Schlessinger (1966) Tech. Rep. No. 24 U.S. office of Newark Research Information Systems Branck. He found that the eye-voice span varied with the grammatical structure of the material, most people in reading seeing as far ahead as the end of the phrase.