# SPECIAL PURPOSE ENGLISH: CHANGING APPROACHES TO ENGLISH LANGUAGE TEACHING

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In recent years profound changes have occurred inside the subject once known so simply as 'English'. Revitalized thinking in psychology, linguistics, and sociology has led to re-orientation in methodology, while the more pragmatic forces of economics and politics have affected the functions of English throughout the world.

Of the many changes that have taken place, the central one is probably the movement towards the teaching of English as an international (and therefore extra-cultural) medium of communication in such fields as commerce, industry, science, and technology. This revised definition of the role of English has usually replaced an older tradition in which English was the language of education, of colonial culture, and of governmental administration. It has given rise to such acronymic variations as ESL, EFL, ESP, and EST. A brief discussion of each of these terms might help to clear up some misconceptions they have acquired.

*English as a Second Language* (ESL) has been given a number of definitions by various authorities, ranging from "any language situation in which English is the second language in time to be studied or picked up, irrespective of the purpose", to the rather more specific "the teaching of English as a replacement language for situations where the mother-tongue is inadequate." In the Malaysian context, it would seem useful to define ESL as "what went on (or what still goes on) in English-medium schools".

*English as a Foreign Language* (EFL); following the above definition of ESL, we can then continue that "EFL is what is currently going on in Malay-medium schools". This may not appear to have clarified either term very much, but it does at least serve to contrast the two approaches in a concrete fashion. On the one hand there is the situation where English Language classes can adopt the methodology of English classes in the USA or Britain, knowing that such work is bolstered by practice in the functional use of the language by all the other subjects as well as extra-curricular activities. On the other hand is the situation where the 6 or 7 periods of English per week are likely to be the only source of language study and use for the student. It is not over-contentious to state as a self-evident fact that the two approaches to English will necessarily be very different, and it is just as obvious, given the National Language policy, that the latter situation of EFL is the one most likely to concern most teachers of English in Malaysia in the future.

*English for Special Purposes*. As Strevens has pointed out, ESP is an umbrella term that can be made to cover just about every aspect of ELT.

ESP is *not* merely the study of one or two restricted registers, nor is it necessarily the opposite of English Literature. The study of literary English is as much a Special Purpose as the study of commercial English. The break with tradition is in challenging the supposition that the only way to study a language is through its literature. This can be an extremely rewarding and productive way to learn the language — but it is not the only way, and for many students in the scientific and technical fields it may be a bad way. The implications of ESP are that different students will have different reasons for wishing (or needing) to know English and therefore a wide range of terminal competences should be catered for. These can range from the limited 'English for Airline Pilots', where oral communication of highly technical data over the radio is required, through the less limited study skills required by the student of science, up to the full range of skills needed by, say, an English language teacher. In the schools situation, while accepting the premise that some kind of common-core English probably has to be taught to all students, irrespective of their ultimate fields of specialization, the suggestion should nevertheless be taken seriously that Special Purpose English courses can begin whenever specialization begins. Thus, whenever the student decides that he is going to study, say, Geography rather than History, or Economics rather than Physics, at that time it should be possible also to begin a course of English language study that concentrates on the register and literature of the same area.

*English for Science and Technology* can thus be seen as one of the categories or registers subsumed under ESP.

There are at least three different study situations in which EST is relevant:

1. Where science/technology is taught in the medium of English at all educational levels.
2. Where science/technology is taught in the mother-tongue at school but in English at University.
3. Where science/technology is taught in the mother-tongue at all educational levels.

Malaysia is obviously a mixture of all three situations at the moment, with No. 3 the final objective. Since this situation is also the one in which the writers find themselves (i.e. teaching in a Malay-medium Science school, whose students will go on to a Malay-medium Tertiary course) a brief description of one approach to the problem of teaching English to the 6th-Form of such a school may be of use — or at least of interest — to other teachers who face the same problems now or in the future.

The word 'problem' has already been introduced because, without being over-pessimistic, one has first to admit that there *is* a problem, and then try to define it as accurately as possible. That there is a problem can be seen simply by looking at the examination results for the best Malay-medium schools: at the end of their 6th-Form studies very few students are able to pass the appropriate examination. A discussion with teachers of such classes reveals a certain amount of despondency on their part, while the students appear to lack enthusiasm for the subject.

A closer analysis of the problem would seem to indicate that:

1. there is a forbiddingly large jump in standards required of the student when passing from the relatively easy (i.e. realistic) English Proficiency examination at the end of the 5th year to the rigours of the examination that terminates the 6th-Form;
2. there is little clear guidance for a full 2-year English course given in the 6th-Form Syllabus;
3. there is a wide discrepancy between the type of English study implied by the Syllabus (i.e. a continuation of the 'structural' approach supplemented by graded readers) and the type of English that the student is expected to be able to deal with in his principal subjects — the English of the science or economics textbook.

The above points are not the only ones to be made; teachers with far more experience in Malaysia than the writers could undoubtedly add to the analysis, while many of the excellent language teachers here could probably demonstrate that they overcome many aspects of the problem, at least with their own classes. It is hoped, however, that the above will be accepted as a reasonably unbiased estimation of the situation.

As a partial solution to this problem, the Ministry of Education has agreed to a project which entails the experimental development of ESP materials for use in the 6th-Forms of Malay-medium Science schools. The materials being developed at the moment are for a Scientific English course; other courses could be written to cover any other specialist field. The course is not intended to replace the normal 6th-Form English course totally, since it takes up only 3 out of 6 periods per week. In its final form it could either be a 'slot-in' course to run parallel with the normal English course, or it could be written into the total course.

The Scientific English Course materials make certain assumptions:

1. that the primary objective of any English course for Malay-medium science students must be reading comprehension skills that enable him to cope with background and coursework texts in his discipline, the vast majority of which cannot be translated into his own language;
2. that the science student will be motivated by a course that can be seen to have relevance to his principal subjects;
3. that the English language teacher — despite initial fears that he or she 'cannot understand science' is in fact perfectly capable of using scientific texts as language study material, when properly presented;
4. that a Scientific English Course does not, and cannot, attempt to teach science.

The main objectives of the course are to enable the students to read and understand these texts — and other similar texts — to which they may be exposed both at school and at University — better and faster. Basically, the job is tackled by presenting many samples of Scientific English, and making the students aware of how the syntactic features develop, co-ordinate and communicate the ideas involved. The student has to read his text: as he does this, he needs to be able to:

*a*) pick up and follow, as quickly as possible, the main thread of the description / instructions / analysis / quantification / enquiry, or whatever.

*b*) identify the basic nominal groups fundamental to the text and be aware of referential syntactic devices used to avoid repetition.

*c*) stop reading the language word by word, sentence by sentence, and be aware of what the text, as a cohesive unit, is communicating.

For this purpose, the course concentrates initially on certain features of discourse which seem to affect cohesion, namely:

1. The total system of deixis, which may be taken to subsume reference items (anaphoric, cataphoric and exophoric) e.g. articles, pronominals, adverbials of, place and time, (*here, there, when, where*, etc.) and other pro-forms such as .... *one, both, either, none*. This may be classified alternatively as substitution. (cf. Quirk et al, 1972, 10.39-65 .... and Muir, 1972, p. 130.)

2. Items of logico-grammatical relation, in particular, linking words expressing addition (*and, furthermore*), causality (*hence, since, because*) opposition or contrast (*although, however, if, except* and similar connecters. (Strevens, 1972, Quirk, 1972).

With these items forming a basic part of all teaching units in the course, sections are devoted to:

3. Word-building — the processes of affixation.

4. Depersonalisation, and the use of the passive forms of the verb.

5. Compounding.

6. Definitions, and relative clauses.

7. Transferring information from one medium to another, for example, the completing of diagrams, histograms, or graphs from data given on tape.

Before going on to discuss actual samples, two important facts have to be pointed out. First, the scientific concepts, and hopefully, the lexis, will already have been met by the students in their science classes. The Scientific English course aims to teach not science, but the English of science. The presupposition must exist that student and teacher share the basic scientific facts referred to in the texts — and present experience shows that the English teachers are not likely to be placed in difficult situations where they are called upon to display scientific know-how that they may not have. The students realise from the start that the course *is* a language course — they do not ask questions about the science. But it is vital to check from time to time that they *are* familiar with the concepts, and to be clearly aware of when, and how often, to expose them to new material as opportunities to check their progress in the skills of inference and prediction. Secondly, the texts used in the course are taken, for the greatest part, from actual textbooks used by Sixth Form students.

Materials, then, are basically designed to promote library skills. These are the skills of reception, the "passive skills". While it may be debatable whether reading is a passive skill, there is no doubt that it is a skill which cannot be learnt in isolation. From the viewpoints of motivation and communicative competence alone, there needs to be listening, speaking, and writing. What student is not likely to hear a lecture or lectures in English? What student does not want naturally to communicate with the language he learns? It may easily be argued that scientific English is not normally spoken English; but in fact, assuming that instructions and descriptions/reports are acceptable notional categories, it would seem inescapable that a student can start using the language of science as soon as he can express simple number and dimension.

We will now discuss three samples of materials used in the course. First, a passage taken from Abbott. (O. Level Physics Heinemann, 1963)

1.

**LINKING AND DEIXIS** **SEC 3.1**

Read through this passage. Notice how the LINKERS help to carry the logic of the argument, helped by the *DEICTICS* which refer backwards (and sometimes forwards.)

1. IF three non-parallel forces act at different points on *A* rigid body AND keep *IT* in equilibrium, THEN *their* lines of action must all pass through *the same* point, *which* may be either outside or inside *the* body.

5. *The* proof of *This* is quite simple. At least two of *the* forces must meet at *some* point, O, AND THEREFORE their resultant will also pass through O. IF *the* three forces are in equilibrium, THEN *the third* force must be equal and opposite to *the* resultant of *the first two*. HENCE *the third* force must also pass through O.

10. *This* is a very useful result, SINCE *it* enables us to apply the triangle of forces to problems dealing with bodies in general AS WELL AS to cases *where* the forces act directly at *the same* point.

Your teacher will help you to fill in the spaces below.

*LINKERS* *DEICTICS*

It will be noticed right away that the student is exposed to the term 'deictic'. This particular passage occurs early in the course, and the students accepted the term quickly, and found it perfectly easy to remember. The basic explanation given is that all deictics have a 'pointing', referential, function, and that students need to be constantly aware of this function as they are reading. Thus, plenty of short passages, designed like the one above, can be used simply to draw the students' attention to these words as they operate in the text. Most of the emphasis up to now has been laid on anaphora such as 'it', 'this', 'their', which', 'where', as illustrated above. Multiple-choice questions are regularly given:

2.

| | | |
|---|---|---|
| *a*) | Although<br>Therefore the deviations due to<br>And | these<br>this cause are relatively<br>the |
| | small, they / it / them have considerable practical importance in connection with the behaviour of gases at high temperature. | |

*b*) 'This' (line 10) above means that....

1) two of the forces meet at O.

2) the three forces are in equilibrium.

3) all three forces meet at O.

4) the third force must be equal and opposite to the resultant of the first two.

This type of analysis may well appear to be dry and tedious; but:

*a*) the students quickly realise the purpose behind it, and appreciate that it helps them in a practical way.

*b*) lots of short samples, tackled variously as group discussions, individual comprehension texts, or presented by the portable tape-recorder, make work like this part of the students' reading techniques which is exactly what is aimed at.

Concentration on the cohesion of texts also makes possible plenty of basic sets of instructions, results, etc., to reorganize, using logical connecters. These may be lexical (as above, cf. If, Hence, Therefore) or numerical (a, b, c, d. 1, 2, 3, 4, 5.) For example:

3. Time sequence linkers require the recognition, and use of, logical order. Using the time sequence linkers *NEXT, FIRST, FINALLY, THEN, or NOW* rearrange and combine the sentences below into a connected paragraph, beginning your sentences with the appropriate linkers.

Sketch your observations.

Connect the coil to the d.c. supply and sprinkle iron filings on the board.

Cut two parallel slots in a piece of hardboard and slide the coil into these slots.

Wind about six turns of 26 SWG copper wire close packed to form a circular coil of about 3.4 cm. diameter.

Before passing to materials which are designed to increase interaction, and infuse life into the classes, we should draw attention to work on affixation. Any study of Scientific English would appear to involve making students familiar with the essential processes of word-building, and cover a range of prefixes, roots, and suffixes likely to be encountered. The relevant sections of Quirk et al. (1972) have been invaluable for reference. Initially, word-building can be explained to the students, with items such as:

| HYPO | DERM | IC |
|---|---|---|
| Prefix | Root | Suffix |

and then different groups of affixes can be presented, by means of short 'deduction' samples, where the essential meaning can be inferred;

This sample deals with two items in a group of number prefixes.

4.

**AFFIXATION**

uni, mono, multi, poly, tri, di, bi.

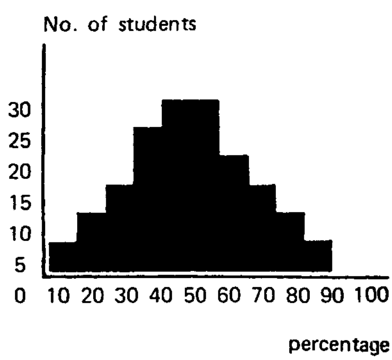
Animals as well as plants are made of cells and a large organism will contain millions of cells. In such *multi*cellular organisms there are many different types of cells, with different functions, shapes, and sizes. Most animals and plants are multicellular, but there are some which consist of only one cell and are therefore called *uni*cellular.

Now, the most challenging aspect of teaching Scientific English could perhaps be regarded as a methodological one. The students in science streams do not lack motivation, and they see clearly the importance of improving their reading techniques. But no matter how willing they are to work, and how practically they view forms of textual analysis and practice as detailed above, their interest has to be sustained, even provoked. First of all, this can be approached by offering work in a variety of skills, e.g. listening, speaking, even writing, though production is marginal to the course. Questionnaires have been issued to gain an idea of:

*a*) students' reactions to the materials
*b*) their expectations from studying English — in particular the language of Scientific English

and it is clear that they have a strong desire to *use* the language. Thus, we have used, from time to time, materials which can be adapted orally; materials which involve regular use of the tape-recorder; and interactive materials (e.g. communication cards) suitable for group activities. If these items are blended into the scheme of the course, interest is not only sustained, but increased, and the teacher is able to use them for a wide variety of purposes. The following samples may serve as suggestions: they are easy to prepare and enlivening in class. First, a simple communication card:

5.

| **A HISTOGRAM**<br>**October Test Results** | **GROUP LEADER** |
|---|---|
|  | 1. Tell your group to draw a vertical and a horizontal axis.<br>2. Tell them what numbers to fill in on each axis.<br>3. Dictate *all* titles, headings, labels.<br>4. Give the readings for each bar.<br>5. Explain how the bars must be blocked in.<br>6. Check that each member of your group has a correctly-drawn histogram. |



Various sets of similar cards can be made, and are very useful in familiarizing the students with instructional language which they can use themselves, and with the many sorts of tables and diagrams likely to be met. They arouse great interest, but it seems best to use them sparingly, and avoid reaching a saturation point. Feedback suggests, interestingly enough, that sixth form students react quickly to items too childish (in their view) and this is, undoubtedly, an argument for the gradual phasing in of ESP materials early in the secondary (primary?) syllabus.

Finally, we may mention two items which involve materials taken from sources outside the students' texts, but which enable them to

*a*) practice listening to a range of native-speakers
*b*) hear many familiar scientific lexical items on the tape
*c*) try to use some of the language, in a role-playing capacity, in plausible situations

The two passages here are transcripts of interviews from 'Science Today' tapes, which are available from the AVA section of the British Council Library.

6.

## SCIENCE TODAY — PASSAGE I

Listen carefully to the tape-recording of this programme of 'Science Today'. The recording is in the form of a series of interviews. The first interview is between John Douvray (interviewer) and Dr. Bernard Greer, from the University of Newcastle-on-Tyne. As you listen, try to fill in the blank spaces.

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This is Norman Dowall presenting Science Today, a fortnightly programme of scientific and technical progress. In this edition, a new theory of the formation of the earth, investigation of an enzyme, stronger false teeth, and the nut of all time.

For centuries man has been speculating .................... the origins of the earth up ................ he live: how did it begin, ................ how did it take up the .................... we know today? A member of ......................... Physics department of the Newcastle-on-Tyne University, Dr. Bernard Greer, ................. advanced a hypothesis that the earth .............. much smaller than it is now, ............... that it is expanding all the ................., John Douvray asked him how quickly.

B.G. ................. a very, very slow rate, about ................. a millimetre a year. This is .................... the thickness of a pencil line, but when .................... remember that the earth is 4,500,000,000 ..............old, this is enough to have .............. it to double its radius is that ..............

J.D. What is your evidence for this?

It can be seen from this extract that the text was adapted in cloze form (every seventh word deleted in this case), mainly because it was felt that the students would be able to complete their versions, after discussion and several playings of the tape, more easily. But such a text could equally be used to highlight, say, anaphora (both intra and extra-sentential), which abound.

The second text is also an interview, but one which lends itself much better to adaptation for role-playing purposes in class. The two speakers have approximately equal, short, utterances.

7. **SCIENCE TODAY — PASSAGE III**

*INTERVIEW*

PETER FAIRLIE INTERVIEWING DR. ANTHONY NORTH

P.F. Dr. North, why are you interested in lysozyme?

A.N. Well, lysozyme is a molecule that helps to carry out important reactions in the living cell.

P.F. And do you only find it in tears?

A.N. No, lysozyme is present in a number of body fluids, for example, egg-white also, which happens to be the source of the lysozyme that we use for our analysis.

P.F. Now, is this the first molecule whose structure has been unravelled in this way?

This tapescript was divided into two sections, allowing separate scripts for the 'interviewer', and 'Dr. North', and issued to divisions of the class for role-playing use and reading, after the students were familiar with the taped version and pronunciation. Once again, the possibilities are many and varied, but basically such material offers a different type of challenge to the students. They enjoy listening and though they are initially overcome by the speed of delivery, practice, and the issue of scripts soon speeds up their responses.

Reactions to an evaluation questionaire showed that students felt that the Scientific English Course was more use to them than common-core English. They expressed a very strong preference for group work; and most of them felt that while English would be invaluable to them in the future, they would put speaking ability first in their list of skill priorities. Though this reaction might be said to contradict the objectives of what is essentially a library-skills course, it could not be ignored; and consequently oral activity has been carefully integrated into the course.

In conclusion, it must be pointed out that these Scientific English texts can only be used with science-streamed classes. The material is so instantly recognizable as belonging to a specialised field of interest that Arts classes reject it almost at once. There is, therefore, the possibility that similar materials could be devised relating to the Social Sciences (especially Economics, History, and Geography) for use in these streams, since they too have extensive reading and reference problems.

## References

D. Wilkins. *Grammatical, Situational, and Notional Syllabuses.* ETIC, ELT Documents (73/6).

*Modern Languages — the Linguistic and Situational Content of the Common Core in a Unit Credit System.* Council of Europe, Strasbourg, 1972.

R. Quirk, et al. *A Grammar of Contemporary English.* Longmans, 1972.

J. Muir. *A Modern Approach to English Grammar — an Introduction to Systemic Grammar.* Batsford, 1972.

P. Strevens. *Technical, Technological, and Scientific English (TTSE).* IATEFL Conference, London, 1972.

J. R. Ewer & G. Latorre. *A Course in Basic Scientific English.* Longmans, 1969.