DOCUMENT RESUME

ABSTRACT
          In January 1975, 31 Venzuelan students of science
were admitted to the University of Essex. It was suggested that a
pre-first-year period be divided equally between attendance of
regular college courses and English courses designed especially for
them. This article describes the English course hurriedly prepared to
meet this specific situation. The general guidelines were: (1) the
English teaching section of the scheme should be heavily, though not
totally, oriented to the preparation of materials in English for
Special Purposes, and (2) grouping should be according to scientific
specialty and not according to proficiency in English. The first term
was devoted largely to passive work taught in 5 two-hour sessions
each week: (1) kernel lessons intermediate, (2) basic English for
Science (BEFS), (3) BEFS, (4) continuation of orientation and social
English, and (5) listening/reading materials. The materials and
activities used for each of these sessions are described. The cloze
procedure was used extensively as was the language laboratory for
listening exercises. Reading and writing skills were not tackled
systematically until term 2, when the 10 weekly hours were divided as
follows: (1) kernel lessons, (2) aural comprehension, (3) BEFS, (4)
oral production, and (5) reading comprehension and writing. Students
will be evaluated on a pass/fail basis focusing on the study skills
needed by a first-year undergraduate in science. (TL)

THE SUBJECT commonly referred to as English for Specific (or Special) Purposes
is currently attracting a great deal of attention in many countries, particularly
in the field of science and technology. This edition of ELT Documents presents 3
papers which approach this subject from a different perspective. Two of these
record valuable field experience: in one case in an oversea: situation (Tabriz),
and in the other in Britain (Venezuelans at the University of Essex). The paper
by Dr J Cleary presents the EST problem from the scientist's point of view and
should give teachers of English an insight into what the head of a science
department might ask of the English department. Dr Cleary is both a chemist and
an educationist. He has had experience of both the British and American education
systems, has taught in both L1 and L2 situations, and has been involved in teacher-
training, curriculum development and materials design. His paper, 'Science Teaching
in a Second Language Situation', should provide insights for all teachers of
English who are teaching science students. It is hoped that all 3 articles will
assist those engaged in the design or administration of EST courses.

ENGLISH FOR SCIENCE AT THE UNIVERSITY OF ESSEX: THE VENEZUELAN SCHEME:
MATERIALS DEVELOPMENT AND METHODOLOGY - Sarah Freeman and Jo McDonough

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The background to the 'Venezuelan Scheme' currently in operation at the
University of Essex is, briefly, as follows: At the beginning of January 1975,
31 Venezuelan students of science descended on the university. The agreed
framework for their status as students was that they should spend a preliminary,
'pre-first-year' period (ideally one academic year, in this case, 2 terms)
divided roughly equally between English classes and attendance of part of the
Essex Common First Year science classes; more specifically, that they should
attend the first-year classes of the department into which they eventually hoped
to gain entry. (The first-year scheme of study in science at Essex is, as its
designation indicates, a general one, in so far as a student spends one-third
of his time studying his own at least intended specialism and the other two-
thirds of the time studying 2 other science subjects: for example, a student
primarily interested in Electronics is required to take Mathematics and might
also opt for Computing. The Venezuelan students, then, are only studying
in the departments to which they are currently applying and are not required
to fulfil the other two-thirds of the first year course.) The majority of the
students, as agreed under the initial plan, are applying for first-year entry
into the departments of Computing, Electrical Engineering Science, Chemistry and
Mathematics, and if successful will go on to take the full first year course.

Since the decision to accept these students had been at very short notice, and
since they had all been selected on the basis of their proven ability in their
science subjects at university in Venezuela with no actual regard to their
proficiency in English, pre-planning of the English component of the course was
virtually impossible. It was only feasible to adhere to the very general
principle set up by the course co-ordinators that (1) the English teaching
section of the scheme should be heavily, though not totally, oriented to the
preparation of materials in 'English for Special Purposes' and that thus (2)
grouping should be according to specialism, and not according to proficiency
in English. (As far as (1) is concerned, one might make here the incidental
remark that 'English for Special Purposes' takes on a rather different
meaning when applied to a teaching/learning situation where students are
studying against the background of English as a foreign language, as opposed
to the situation where, when studying in their own country, they probably
need only a reading acquaintance with the language.) The students' level
of English, ranging from 'virtually non-existent' to 'upper intermediate' (as
rough-and-ready labels), and generally being of a lower standard than the
Venezuelan authorities had led us to believe, gave rise, as one might expect, to

doubts about the wisdom of the decisions (1) and (2) above; however, the principle was not abandoned, and we feel, even in retrospect, that it would have been a mistake to do so.

The beginnings, then, from the point of view of the English part of the scheme, were hardly auspicious. Much of what was done, particularly at first, was ad hoc, and of necessity the relationship between materials production and the use of those materials in the classroom has been virtually instantaneous. Thus, a large part of what is said below represents a retrospective view of course-planning and materials design rather than the 'luxury' situation of a longish preparation period before a trial run of materials. At the same time, however, we feel bound to make the immediate observation that the 'luxury' state of affairs is surely also fraught with the danger of being out of touch with with contingencies and realities of the actual teaching situation for which it is intended, and we have found the constant contact with, and adjustment to, the day-to-day classroom situation of very great value, and something we would not happily exchange for the superficially more attractive pre-planned package. Our methodology, to be outlined in what follows, has therefore to a large extent crystallised rather than been rigidly imposed. We shall now go on to set out the structure of the course in a little more detail.

As already indicated, the students were divided into 4 groups according to specialism. The course was then designed (again, we must stress, as it was in progress) so that each group had 10 hours of English teaching per week. (Of the total of 40 hours per week, 20 are being covered by the course co-ordinators and the other 20 by 4 part-time teachers). The first 4 weeks constituted (1) a preliminary diagnostic period - a rather chaotic one, owing to initial mis-understandings and clashes of expectations - and (2) a period of 'orientation', ie (for example) of talks from people from various sections of the University (a librarian, the University Information Officer, the Dean of Students) and more specific language work based on the need to help the students find a 'way in' to life at Essex. We do not intend, in the context of this article, which is concerned with the development of ESP materials, to expand on this brief description of the initial 'bloc' of the course: it was important, however, for the light it threw on the skills requirements of the students and the order of priority which we subsequently gave to dealing with those requirements. They can be roughly listed as follows:

    (a) Some remedial grammar work;
    (b) Listening) seen to be the major considerations for the early
    (c) Speaking) part of the course.
    (d) Writing   It was clear that this would have to be dealt with very
seriously, given the requirements of the science departments (examination answers, written reports and so on), but concentration mainly on aural/oral skills was felt to be important, not least for reasons of motivation. When writing, one is to a certain extent, at least apparently, insulated from one's audience, but listening to a science lecture/speaking with a science laboratory demonstrator/interacting verbally in the coffee bar are unavoidably direct and potentially alarming situations. Thus, in the next course we intend to preserve this sequence with the modification (see below) that writing would be introduced earlier.
    (e) Reading. Since most science students studying in their own countries have quite a lot of visual contact with English, and since these students (obviously to a certain extent erroneously) felt 'at home' with a written text, we decided in the first instance to introduce reading passages incidentally, as it were, as part of other, listening, exercises, and only in the second term did we elevate the reading of texts to the status of a classroom session in its own right. (More is said on the relationship between reading and listening exercises below.)

Exigencies of staffing, volume of work etc, meant that during Term I, we were able to produce original materials only for one 2-hour slot (out of 5) in the week. The plan for the first term was thus as follows:

2 hours	2 hours	2 hours	2 hours	2 hours
(a) Kernel Lessons Intermediate	(b) Basic English for Science	(c) Basic English for Science	(d) Continuation of orientation and social English	(e) ** Listening/Reading materials

Notes

(a) <u>Kernel Lessons Intermediate</u>. The students' not very high level of basic spoken English necessitated some course of this type, and KLI was judged to be most appropriate to their needs. If one accepts the premise (cf Rivers, 1968) of 2 'levels' of language learning, a 'high' and a 'low' level, then such a course as KLI provides for the 'lower' level, where students are encouraged to build up such key factors as response automaticity, without which the attainment of a more 'creative' use of language would be immeasurably more difficult.

(b) <u>Basic English for Science</u>. We have been using the pilot edition of this as yet unpublished course, written at the English Language Teaching Development Unit for Oxford University Press. Its intention is to present and practise as large a number as possible of the basic structures and vocabulary items that can be generalised across the sciences. We should prefer not to comment on it in detail at this stage, since we have been using it on condition that we first send in a report to the publishers.

In the context of the early BEFS lessons, a certain amount of preliminary verbalisation work, using materials written by the co-ordinators, was also undertaken. For example:
    (i) Number work: including simple numbers, fractions, decimals, dates. Various procedures were used: dictation by teacher to students and by students to students, verbalisation by students of numbers, etc.
    (ii) 'Channel conversion': verbalisation from diagrams, and vice versa, ie construction of diagrams from oral descriptions. (Again, teacher-student and student-student, occasionally student-teacher).
    (iii) Terminology: listening and pronunciation. This was more specifically oriented to the students' different disciplines, as listed earlier, and was simply intended as an exercise in basic aural identification and oral production of key scientific terms.

(e) <u>Listening/reading materials</u>. These materials, developed specifically for this course and thus of most interest to us from the point of view of research and development, must now be discussed in a little more detail. The use and development of these materials has also continued into Term 2. From the outset when constructing these materials, we had certain principles in mind. Firstly, the students' degree of scientific knowledge was sufficiently high to obviate the need to teach science, via English, in any sense: this seems to be one important way in which our materials differ from many other types developed under the heading of ESP. (This principle does, of course, give rise to the problem of defining a 'cut-off point' between the teacher

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'teaching English' and 'doing science', a rather theoretical question which need not concern us further here.) Secondly, we accepted the necessity of becoming quite closely involved with the relevant science departments at Essex, and this is a good point at which to acknowledge the considerable degree of co-operation we have received from those departments. The bulk of our work so far has been in having recorded, and sometimes attending, lectures, transcribing them and constructing teaching materials from these 'raw materials' for these listening sessions. Some preliminary work has also been done on recording and analysing science laboratory sessions, but this work has not yet passed its infancy, and needs much more attention in the future. Finally, as already indicated, we started from the practical principle that concentration on listening should be our first priority.

With these 3 principles in mind, we shall now set out, with comment, a list of listening exercise types. The language laboratories have been the main vehicle for these classes, with follow-up work in a classroom in the latter part of a session. These sessions, despite the deficiencies of all language labs, have enabled the teachers to individualise the teaching/learning process to a certain extent, since the semi-programmed nature of the materials ensures that students can, within reason, work at their own speed. This is particularly necessary in view of the fact that all the groups are mixed-proficiency.

1. 'Cloze' procedure

a. This procedure was used in the first sessions with blanks left for technical words: students heard a section of a lecture (usually, though not always, broadcast by the language teacher rather than the science lecturer for reasons not directly relevant here) and had a sheet of paper with the blanks on in front of them. It was intended to help students pinpoint words and other items they had only seen before, and to spell them correctly. The aim of this exercise was therefore limited, and the results, which showed themselves quickly, were satisfactory.

b. The procedure was then used, a little more extensively, with blanks left for structural words. As such, it was less of a first-aid measure than (a), and promises to provide more of a basis for structuring a course.

c. More recently, the 'cloze' technique has been used to build up in the students a recognition of the stress pattern of English as a way to listening to lectures. Blanks have been left for all stressed words in a text. Secondly, as an obvious reversal of this procedure, only the stressed words have been printed. This latter technique can act as quite a useful ongoing 'test' of linguistic anticipation and grammatical knowledge, and can be made to tie in quite neatly with the main aim of the Kernel Lessons Intermediate sessions. (For example, a sentence like 'They've been going there for weeks now' contains sufficiently few stressed words to confuse the unwary as to what happens in between the stressed items.)

2. Reading passage

In the earlier stages of listening work, the passage used in the language lab for the 'cloze' procedure doubled as a reading text, after students had first seen the passage while listening to it in the lab. This aural/visual association was seen both as an important step towards aural work and as one stage in weaning students from a reliance on the written word. When used as a reading text, in conjunction with simple comprehension questions requiring straightforward single word/phrase/ short sentence answers, it had the effect of reassuring students after they had been engaged in a very unfamiliar activity.

Other reading exercises are discussed in more detail later in this paper.

3. Comprehension questions

We started here with a basic flaw. Students were given a sheet with printed comprehension questions, asked to read them first, and then required to answer them as they listened to a section of a lecture. Whilst this procedure was by no means a disaster, it did in fact often result in tape decks being switched off and answers to the questions being written either from previous scientific knowledge or from information gleaned during lectures.

Thus, the technique developed and currently being used, with some success, is to intersperse questions in a text. Details of this procedure are: (1) the full text is broadcast to students in the lab; (2) the text, which has previously been broken up into short sections, is read again, section by section. After each section, there follows a small number of comprehension questions. (3) Students try to answer these questions, which are closely text-bound and do not require long answers, in the space left by the teacher on the tape. (4) The rest of the session is given over to the completion of this exercise. We find, for example, in a text of 350-400 words with 16 questions, and in the space of 25 or 30 minutes, the total number of more or less adequate answers given on tape ranges from 6 to 16. (5) As follow-up work for the class, students are then asked to write down the answers to the questions. (6) Then, equipped only with the answers, agreed on as adequate by the whole class, students are asked to reconstruct the text orally. (This procedure is clearly related to work done by L T Frase on reading comprehension materials, with interspersed questions.)

4. Note-taking

The type of comprehension question discussed above seems to us to lead logically to the final step in listening skills for our purposes, namely the removal of all props (whether written or aural/oral, in the form of interspersed questions) and the ability on the part of the student to dissect a lecture (for example) for himself and to extract its key information content. We have reached this point rather late, partly because this group of students has not had the advantage of being here for the whole of an academic year and partly because of their level of English. We are trying to go some way towards rectifying this delay by a 4-week intensive period currently running. (See below)

Clearly, 'cloze' procedures and comprehension questions, however valuable, are not in themselves sufficient to guide a student through the maze of a lecture, and other activities have also been included in the programme. These will now be listed briefly:

5. Underlining and bracketing

In the context of the intermediate part of the course, when the prop of a reading passage was still used, students were asked to underline what they considered to be key information and to bracket anything they judged to be only of minor significance. Since this is a rather more controlled exercise than the original type of comprehension questions, with its somewhat less than happy marriage between listening and reading skills, it has proved correspondingly more successful. In conjunction with this:

6. Focussing

was used as an exercise. After students had underlined key parts by listening, a listen and repeat drill was devised in which the teacher read the sections he/she had focussed on to the tape. These sections were then repeated by the students. This had the two-pronged effect of giving confidence in pronunciation,

stress patterns and intonation, and of reinforcing important information. We owe this idea to Rivers (1969).

7. Boundary markers

Clearly, one crucial way of discovering 'signposts' in lectures is to listen for markers ('so', 'well', 'now') indicating such factors as:

> Introduction of a new topic;
> Summarising;
> Change of direction in subject-matter;
> Examples.

Students were asked to identify these and others and comment on their function after listening.

(At least one co-ordinator, listening to a particularly intractable science lecture, has found it possible to follow the structure of a lecture very clearly while understanding next to nothing of the content.)

8. Question formation

This has taken 2 forms: a) 'creative', and based on an understanding of the written text (see below) and b) mechanical, in the sense of the well-tried method of 'Ask if...' Statements are taken at random from the lecture, and turned into questions by the students on their tapes, as directed.

9. Identification of repetition and irrelevancies

This has been operated only as an incidental exercise, to show students that in general most lectures contain one, if not both, of these features, and that, more specifically, different lectures manifest these features in different ways.

We do not pretend to have run the gamut of listening comprehension methodology nor even to have found the correct balance for each type of activity. What we would claim, rather tentatively perhaps, is that we have evolved, or are in the process of evolving, some valid techniques, both for the particular purpose for which we need them and which, we hope, are generalisable for other areas. Furthermore, our preoccupation so far in designing listening materials has differed somewhat from that in devising reading materials: with listening materials, we find that we have concentrated more on procedures and techniques, whereas, with reading materials, we have been more concerned with exercise types.

Term 2

Reading and writing skills were not tackled seriously or systematically until Term 2, in view of the obviously more immediate need for the development of understanding while listening, which emerged from the original diagnostic period. In retrospect, it would probably be preferable to begin some work on simple reading passages and to construct basic writing practice on them in the first term, to avoid the somewhat dangerous reading of transcribed lectures without the accompanying tape, which tended to occur in the first term; students were apt to regard transcriptions as specimens of the written language and to reproduce, in writing, forms which belong only to the spoken medium. (The difference between spoken and written forms was to some extent pointed out by asking students to expand contracted forms to the more formal written version; however, some more logical classroom follow-up to listening in the lab, other than those mentioned, must also be devised in the coming year.) Early written work would also ease to some extent the transition from almost completely controlled language-work to the writing of examination questions eventually expected of the students. It would also

allow a more gradual approach from individual structures, through sentence and paragraph up to the complete essay answer, on the lines of the 'English in Focus' (1974) series.

The first term had been devoted largely to passive work, requiring the student to expose himself to a large amount of data, but asking him to do little in the way of production, in either speaking or writing. The balance of the programme in Term 2 was altered, so that the students were gradually prepared to take an active part as full participating students by the end of the course. The new division of the 10 teaching hours is as follows:

2 hours	2 hours	2 hours	2 hours	2 hours
Kernel lessons	aural comprehension (1 hour in lab)	BEFS	oral production	reading comprehension and writing

Some remedial grammar was still felt too necessary for most of the students, so the 2-hour session on 'Kernel lessons' was retained. The listening session was also retained, using the more sophisticated of the activities described above. There was now only a single 2-hour session on the 'Basic English for Science' course, since many students had already got beyond the level aimed at in this course, and the high quality of their own scientific knowledge also made it difficult to present convincingly, its material being simple scientifically, as well as linguistically; it was not designed to be used with students who had already tertiary science education. In one of the 4 groups, the session on 'BEFS' was abandoned entirely, at the students' request, and has been replaced by a so far highly successful experimental session: each week one or 2 students give an oral report of practical work which they have done in the electrical engineering lab, presenting their findings to their fellow-students and to the teacher, who can generate extra 'talk' by genuinely pleading ignorance and requesting explanation. Due to their keen interest in the subject, all students show extreme eagerness to express themselves, and although the presentation is generally given by one student, every member of the class contributes, both by verbal explanation and the use of diagrams on the blackboard. This is perhaps as near as one will ever get to 'communicative' teaching, or rather learning.

Since the emphasis this term was to be on active production, all classes had one session which was devoted largely to oral work. The basis of this session owes something to the ideas of Peter Wingard (1971) in his programme for Zambian university students. The first hour of each session is devoted to a lecturette delivered by a different student each week, on some subject which interests him. Topics, either scientific or of more general interest, were selected at the beginning of term, relevant reading matter in the form of books and articles is made by the co-ordinators, and students are encouraged to discuss their ideas and the language of their lecturette with one of the co-ordinators before they present it to their colleagues. The audience are asked to make notes and ask questions, and a discussion of the topic evolves with the original speaker as chairman. Some experimental recording and replay of the lecturettes has also been done on a portable recorder; it is hoped to develop this more systematically, as it seems possible that it would prove a useful device in group analysis and correction of errors. As it is, the teacher monitors the language throughout, correcting gross errors, and providing the students with some kind of feedback on the language used.

The lecturette was initially intended to occupy only one hour of the session, but
it frequently occurs that such interest and keen argument (in English!) on the
topic is generated, that the full 2 hours are taken up. However, for the second
half, a number of 'talking points' have been prepared: these consist of recent
newspaper articles, or extracts from New Scientist of fairly general, or general
scientific, rather than specific scientific, interest. These are used for study-
skills work, such as note-taking, summarising and oral reproducton, and are also
intended to generate discussion.

The final session of the week is devoted to the reading/writing texts, and the
accompanying exercises, which are a new feature of the term. Materials for these
sessions have been taken from various sources: at first sections of set books which
students will be faced with in the first year were exploited, but also articles
relevant to each discipline have been used from New Scientist etc; and these have
the added advantage of presenting new knowledge and of avoiding close study of texts
which the students will meet with again in the next year. The latest materials
have been exploring the possibility of cross-reference between the disciplines,
so that some materials have been found useful both to computing scientists and
electrical engineers, or both to chemists and electrical engineers. Such
correlations are, of course, a great advantage to the materials-writer faced
with the daunting task of writing for 4 different disciplines week in, week out.
But there is still felt to be a limit beyond which materials cannot be made general-
isable to any science; this limit occurs at a watershed where motivation and
familiarity with the subject part company: where one is absent, the
other will soon vanish, too. Although it would, of course, be desirable to
write a course usable by any student of any science, the motivation sustained
by the use of subject-specific materials would be alarmingly lacking.

The texts selected, then, either from set books, or relevant journalistic
articles, are exploited by various types of exercises on logical structure and
specific language points. The language points covered have evolved gradually
from the texts as an unordered selection of the recurrent structures in
scientific writing in English. The absence of a planned programme of the
language points to be covered was due to the ad hoc nature of the establishment
of the project, and the immediacy of the need for materials. Research into
the most commonly occurring structures runs parallel to the writing of materials.
However, what has resulted from detailed study of texts is a fairly wide, if
unsystematic, coverage of the most frequent structures; these can now be drawn
up as a list, perhaps to be tackled more systematically in the next course,
although such an approach is somewhat contradicted by the fact that certain
texts lend themselves more to exploitation of certain structures than of
others. It has seemed to us a sounder policy to let the language-work grow
from the text, rather than to force the text to comply with the need to
practise some particular point.

The activities, to some extent in parallel with the listening activities,
tended at first to be more receptive, concerned with identification of patterns
and structure, and the analytic examination of texts; but as the term
progresses, students are asked to do more productive and reconstructive work.

Activities associated with reading comprehension texts

1.   Comprehension questions (see also listening above)

Questions on content have been used, both presented in a list at the end of the
text, and interspersed between sections; the latter procedure has proved more
successful as a teaching method, since it forces the students to examine in
detail a small portion of the text, rather than encouraging them to answer a
general question in a rather general way. One problem in devising comprehension

questions is the writers' lack of scientific knowledge; this can lead to the con-
struction of questions to which the answers are so simplistic that the
students disregard them and search their scientific knowledge for some more
fundamental answer: if they produce such an answer, the teacher is not
equipped to judge its correctness. This problem results from the difference
in viewpoints: the writer regards the text largely as a means of producing
language-practice, whereas the student tends to pay more attention to the
information conveyed, and his attitude can bring the language-teacher
dangerously near to attempting to teach science. One way of avoiding this
misunderstanding might be to enlist closer collaboration with the science
teachers, in asking them to suggest sensible questions.

The comprehension questions are the only attempt that has been made to
check in a general way the absorption of the content. Otherwise, exercises
have been based on examination of specific language-points and conceptual
structure, and this indeed seems to be the more legitimate concern of the
language-teacher.

2.   Cohesion

The cohesion of text was approached first from the low-level identification of
referents of anaphoric and cataphoric devices, such as relative and demon-
strative pronouns, demonstrative adjectives, elliptic verbs, and other such
sentence-bound or intersentential cohesive apparatus. This has also been
done in reverse as a pronominalization exercise.) This, one of the earliest
passive exercises, was devised along lines suggested by Mary Lawrence (1972),
the cohesive devices being circled in the text. It has been done both with
multiple-choice questions and with free selection of the possible referent.
As a teaching method, the second is probably to be recommended, as multiple
choice questions may, through the need for distractors, unnecessarily suggest
to the students obviously wrong answers which they would not have selected
in a free choice.

Attention was then focussed on intersentential cohesion as expressed by
logical connectors, and students were asked to identify the function of these,
which had been underlined in the text. This was originally done through a
matching exercise, and then students were left complete freedom of decision.

The third activity associated with cohesion concentrated on the conceptual
and logical structure of the text as a whole: this resulted in exercises in
dividing the text into sections, providing suitable sub-headings, formulating
questions which were answered by a certain section of the text, writing
a single sentence to summarise the content of each section, and stating the
significance of a change in verb-form; students were also asked to complete
diagrams of the structure of information, and this was found particularly
appropriate for texts consisting of some kind of classification. Linked with the
focus on logical connectors, it was hoped to sharpen the students' ability
to discriminate between general truths and examples, between facts and
hypotheses, between facts and explanations, and between information-bearing
statements, and references to what is said elsewhere in the text. These have
been found to be the sentence-functions most common in scientific writing,
but further analysis of texts in the coming year should lead to a fuller
list, and finer distinctions between functions.

Some work has also been done on reconstructing the logic of a text, through the
use of exercises in unscrambling the order of sentences. But these have not
been pursued much, for two reasons: firstly, the difficulty of constructing
exercises where the logical and functional value of sentences is clear, yet the
level of information-transfer is not so low as to be an insult to highly educated
learners; secondly, as a result of their previous academic training, these

particular students have few problems in logical thinking.

The whole gamut of these exercises on cohesion of text was, in fact, practised on each text (there being no desire to delay work on a whole text until the sentence had been dealt with!); however, in each unit of textual analysis, some attempt at grading was made, and the tasks were usually begun at sentence-level.

3. Contextualised pattern-practice

The reading/writing texts have been heavily exploited for constructive language work and for contextualised practice of patterns which have been found particularly frequent in certain types of writing. As with the work on cohesion, the tasks again progressed, in each unit, from sentence-bound structures to the reconstruction of complex sentences and paragraphs. It is hoped in the coming year to arrive at a more comprehensive and less rudimentary taxonomy of functions, in Wilkins's (1972) sense, occurring most frequently in the scientific writing with which our students must become familiar. So far, the following list summarises the broad areas covered:

  (i)   Hypothesis;

  (ii)   Impersonal statement;

  (iii)   Descriptions;

  (iv)   Definitions:

  (v)   Instructions;

  (vi)   Expression of cause and effect;

  (vii)   Emphasis;

  (viii) Logical relations as expressed by conjunctions.

4. Vocabulary and collocation

Vocabulary practice and extension was handled firstly by traditional exercises requiring the student to give the meaning of selected words by using them in a sentence. They were also asked to construct statements to show the difference between semantically related groups of words. Cloze procedure has also been found to be a useful teaching technique when attempting to teach collocation: a cloze text is prepared on a text studied the previous week in an attempt to reinforce the most important collocations. The cloze text can usually be constructed by writing a simplified summary of the previous week's text, including the most frequent phrasal verbs, and prepositional phrases associated with adjectives and nouns. In this use of cloze, words have been omitted, not at random, but specifically to focus on these collocations: at first the prepositions were omitted, and this, even if students were not always able to fill every blank, at least made then aware of the connection between the parts of the collocations. Most students were, however, able to fill the majority of the blanks directly. Recently, cloze procedure has also been tried experimentally, blanking-out the meaning-bearing word, noun, verb or adjective, and leaving the associated preposition. This has the advantage of forcing the students to consider the sense of the whole, rather than filling the blanks as a rather mechanical activity, which does not necessarily indicate whether the learner has grasped the import of the whole text. However, students found this a much harder task, even though they were familiar by then with the content; this may be due to the far less frequent occurrence of back-association, as shown in Ervin's experiments in word-association. Nevertheless, it would seem a good exercise for the more advanced students.

Summary of exercise types and associated language items

1. Comprehension questions

    i   at end of text;
    ii   interspersed.

2. Cohesion

    i   Reference: this, these, that, those, which, who, what, such, the,
    one, other, latter, former, each, do, etc;
    ii   Logical-connector identification and function matching: but, however,
    if, whether, although, whereas, furthermore, besides, so, for example,
    supposing, let's suppose, say, let's consider, etc;
    iii Conceptual structure analysis.

3. Contextualized pattern practice

    i   Hypothesis: conditionals;
    ii   Impersonal statement: passives;
    iii Descriptions: a) reduction and expansion of relative clauses;
                        b) adjective formation;
                        c) compound noun formation and explanation;
    iv   Definitions: define as, denote as, describe as (+ passive);
    v   Instructions: commands and passive statements;
    vi   Expression of cause and effect: result in/result from/caused by/
    produced by, etc;
    vii Emphasis: What I want to say is..., etc;
    viii Logical relations: because, since, as, therefore, thus, hence,
    while, ...that..., by.........ing, etc.

4. Vocabulary and collocation

    i   Semantic distinctions through sentence construction;
    ii   Cloze procedure on collocation: a) with forward association:
                                          b) with back-association:

    depend on, associate with, be familiar with, perpendicular to, bisect by,
    rotate around etc, etc.

Intensification of course: 1. New Science

Since all science teaching at the university stops after the fifth week of the
summer term, and all regular students are occupied with exams, it was decided to
run a more intensive course in the last 4 teaching weeks of the second term,
prior to the students' being interviewed for admission to their respective
departments in Week 10. Each student receives 2 extra 2-hour sessions during
the intensive period: in one of these, texts of general interest to scientists
of various disciplines, taken for example, from New Scientist articles, and
books on the role of science in society and the scientific revolution (see
references) are exploited in various ways for study skills purposes:

1.   Sections of the text are used for note-taking practice.
2.   Students identify different sections in the argument.
3.   Sections are used for listening comprehension, read either by the teacher
or by a member of the class.
4.   Silent reading comprehension.
5.   Some reading aloud of short sections for pronunciation practice.
6.   Oral summary of part or whole.
7.   Written summary of part or whole.
8.   Dictation: a) straight dictation and correction of unseen passage;
                 b) dictation of passage studied previously;

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c) dictation, and correction by oral reconstruction of text as
    erased from blackboard.
9. Some written exercises of the type already described.
10. Cloze procedure to test absorption of content and grammar in a following
session.
11. Tightly controlled discussion arising from questions of general interest.

2. Videotaped mini-lectures

The second extra session is to be used for study of experimental videotaped mini-
lectures, each lasting about 10 minutes, made in collaboration with the lecturers
in the science departments: each deals with a subject which is familiar to the
students in their own disciplines, and is designed to be complete in its structure
in that it has a clear introduction, middle section, and conclusion. (It has
already become fairly clear to the writers that a time shorter than 10 minutes
would be ample and that it would be much easier to construct controlled language-
work on a shorter tape.)

Two detailed handouts on note-taking have been prepared for use in conjunction
with the videotapes, which are intended to give controlled practice of the real
lecture situation. For each videotape, a detailed sheet has been prepared
drawing the teacher's attention to particular structures which are typical of
the lecture, to the most prominent logical connectors and markers of frame and
boundary in the lecture, and suggesting various exercises. Some hando   for
students have also been prepared, some requiring verbalisation of char and
diagrams, and some giving practice in a particular structure, such as the
conditional. In addition to these suggestions specific to each videotape, a
list of other possible activities has been drawn up:

1. Note-taking, after which notes may be compared in groups to achieve a 'best'
set of notes, followed by checking against the original VTR.
2. Reconstructing part, or the whole, of a lecture from notes; eg individual
students could be called upon to 're-lecture' from their own notes or those of
the group.
3. Verbalising the lecture material from diagrams: this can also be tied
down to an exercise in a particular structure (eg if X...then Y...) This may
also be done in reverse, constructing a diagram from a verbal description.
4. Stopping VTR (if technically feasible) at random for simple 'What did he say?'
or 'What will he say next?' comprehension exercise.
5. Getting students to formulate questions on substance of lectures.
6. cf 1 Structure of lecture
    a) How many important points in lecture/section can be identified?
    b) How many examples/asides?
    c) Identifying markers of discourse as indicators of intention: eg, well;
    now; for instance/example; (and) so; as follows; thus; then; (if) however;
    namely; as I mentioned before; that is; etc.

Analysing functions of these and others can be used as a controlled language
exercise and as an exercise in prediction. (See also 7 above in listening
materials)

    d) How does the lecturer get from one point to another with ese and other
    procedures?
7. Explaining convincingly (if not correctly) to the teacher.
8. Relation of speaking to boardwork
eg Is there a functional difference between 'talk' associated with such things
as the lecturer's position when turning to the blackboard and that associated
with his turning away from the board to the class (ie camera): eg giving
explanation as opposed to information?

Evaluation

It is a part of student expectations that any course must inevitably involve some
kind of evaluation. However, the English course described here is seen mainly
by the co-ordinators as a service course offered to other departments. We do not
therefore feel that our department has a role to play in testing the students,
and have therefore refused to write a general test of the students' English, as
was suggested by the science departments. A test of English for what? The
only reasonable evaluation seems to be an admissions procedure, to be set up by
the department which is interested in accepting the student. The course co-
ordinators have therefore suggested a possible testing procedure, aimed at
examining the study skills needed by a first-year undergraduate in science.
The scientists are to provide suitable material for reading and listening
comprehension, which will be exploited by the co-ordinators for language work,
involving the students in exercises of the type that they have been doing
throughout the course. Having done the reading and listening components of
the test, the students will have an oral interview with the appropriate science
department, at which the co-ordinators would like to be present as observers; the
topic of discussion at the interview will be partly that dealt with in the previous
two components. The idea behind this procedure is to ensure that the students
are not disadvantaged by being questioned on a subject which they may happen not
to have studied, and to ensure that there can be no confusion between lack of
English and mere unfamiliarity with the subject. There will be some kind of
written follow-up on the same topic, probably in the form of a short summary of
the subject discussed, as the scientists are anxious to obtain samples of
extended writing. The language teachers will not, however, set any pass/fail
mark for any of these exercises, and the only kind of scale set up will be one
of comparison between students; there will be no implied suggestion that those
at the bottom of the scale are ill-equipped to enter the department.

Meanwhile, although the language teachers do not intend to test the students
merely for the sake of testing, the course itself must be evaluated; the coming
year is to be used for a consolidation and systematisation of the work prepared
so hurriedly to meet the immediate need. An evaluation of the scheme is
essential to achieve a sophistication of methods. But once a battery of
activities, as described above, has been established, the groundwork has been
done: the battery, it would appear, can then be applied to the language of any
other specialisation. Nevertheless, the point made earlier cannot be overlooked:
each text or lecture dictates its own linguistic requirements; the associated
exploiting activities must grow from the nature of the language in which the
science is contained.

One of the other tasks to be considered in reviewing the present year is the
still unsolved problem of the most efficient mixture in a course of this kind,
of science teaching/English for science/general English. But one thing, of
which our present experience has convinced us, is that English for science can
no longer hover at the door of the laboratory or outside the lecture theatre:
it must have the courage to step inside and, if need be, burn its fingers.

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Jo McDonough

May 1975

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