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Text as a Vehicle for Information: the Classroom Use of Written Texts in Teaching Reading in a Foreign Language[1]

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Drawing on work in the teaching of English both as a foreign language and as first-language, the authors outline an approach to the classroom use of texts for developing reading skills in a foreign language for a specific purpose. The principle characteristics of the approach are:

1. It emphasizes the function of texts as a vehicle for information (TAVI) rather than as a linguistic object (TALO).

2. It takes the (potential) value of a text to the student as the prime criterion for selection.

3. It adopts the notion of 'topic-type' (cf Fillmore's 'conceptual frame') as a basis for analyzing the semantic content of texts, both by the teacher and by the learner.

4. It provides a framework for classroom interaction in which students work in small groups to puzzle out the meaning of text. Groupwork involves preparatory work, work on text, and follow-up work exploiting the information recovered from text or applying the techniques to other texts. Those techniques are designed to be transferable to the learner's further reading outside the classroom.

The approach is illustrated via English text; but it is contended that the approach is equally valid in teaching reading in *any* foreign language.

INTRODUCTION

For as long as human beings have learned the languages of nations other than their own, that learning has been purposive: that is to say, foreign languages have been learned not for their own sake but as vehicles for social and economic contacts and for the transmission of ideas.

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Wherever the purpose underlying the learning of a foreign language is clear to the learner and/or to his teacher, the use of texts in that language immediately assumes central importance. We may make a distinction here between *deferred* purposes (where the language learned is to be used at some period in the future) and *immediate* purposes (where the language is being learned in a situation where there is an immediate need to use it). An example of the first would be the case where a student is studying (say) English in order, when he graduates, to work in the Ministry of Foreign Trade in a developing country. Such a student will eventually need, among other things, to read technical specifications and advertising matter, to conduct business correspondence, and to engage in negotiations in English. We should therefore, in planning an English course for him, give high priority to the study of texts relating to these different tasks.

An example of an immediate purpose is where a scientist finds in the course of his work that he must have access to information in the English-language journals and periodicals relevant to his subject. In such a situation he will often have to 'puzzle out' for himself the information he needs, using his native wit, a dictionary, and whatever assistance he is able to obtain from his colleagues. Such a 'spontaneous learner' will be working with authentic, unsimplified material at a much more elementary level of proficiency than would be allowed by most language teachers or language courses. However, he will be assisted in this task by two factors of great importance. First, the texts have a real value for him: he is not simply studying them as examples of the language system in use, but because they contain ideas and information that he needs at that moment in time. Second, the search for that information will give a clear direction to his study of the text. He knows what he wants to find, and his familiarity with the subject-matter and with the style of presentation of scientific papers will tell him both where to look for the information and when he has found it. Anybody concerned with mature students coming to study in an English-speaking country will have come across many cases of scientists and others who, by using such techniques of puzzling out texts for the information they contain, have developed a remarkably fluent and accurate reading knowledge of English with little or no formal instruction in the language. On arriving in an English-speaking academic environment and being faced with new communicative demands, many are able, on the basis of the knowledge and the learning strategies they have already acquired, to develop a corresponding command of the skills of writing, listening and speaking, and to do so, again, with little formal instruction.

TEXT AS LINGUISTIC OBJECT (TALO) AND TEXT AS VEHICLE FOR INFORMATION (TAVI)

We believe that the frequent success of the self-taught spontaneous learner faced with the immediate need to acquire a reading knowledge of English for a specific purpose poses a fundamental challenge to us as teachers of ESP, particularly where - as is most often the case - we are teaching for some deferred purpose. That challenge is at its most striking when it comes to the use made of texts in teaching, since the emphasis of the self-taught reader on obtaining information from text stands in stark contrast with what happens in classrooms devoted to what is known as 'intensive' or 'close' reading. There the text is exploited as an *object* of study, its principle purpose being to

exemplify the syntactic structures of the target language, and to be a source for the 'quarrying' of new vocabulary. Let us call this approach TALO - text as linguistic object: it is one which is to be found, with minor variations, in ESP classrooms all over the world, and is encouraged, or at least permitted, by many ESP coursebooks. We wish in this paper to propose an alternative approach which starts from the function of text as a vehicle for information, or TAVI for short. A sample lesson plan illustrating the method is given as an appendix at the end of the paper. The method represents a bringing together of recent developments both in the use of English for learning in the First Language (Davies and Green 1980 and 1981; Davies 1982; Ivanič and Lesirge 1981) and the teaching of English as a Second Language (Widdowson 1978; Chitravelu et al 1981: Johns 1980). TALO and TAVI may be compared at five points. These relate to:

1. the principles underlying the selection of texts
2. preparatory activities for the reading of text
3. work with text
4. the type of teaching/learning interaction involved
5. follow-up activities to the reading of text.

1. Principles Underlying the Selection of Texts

The primary principle for the selection of texts for TALO is that each should show the syntactic structures being taught at that point in the course, and that each should contain a certain proportion of new vocabulary to be learned. Texts will accordingly be modified and rewritten to adapt them to the linguistic grading of the course. With TALO, the subject matter is of secondary importance. Texts are usually chosen as being of 'general interest' within the subject area of the course, popular magazines such as *Readers Digest* being a favourite source. They are chosen to be comprehensible not only to the students but also to their teacher, who too often has little or no understanding of the students' area of specialisation. In addition, texts will be kept short and self-contained, since the aim is to cover each exhaustively within the span of a single lesson. These principles of 'rigid grading', 'general interest', 'teacher comprehension' and 'short texts only' are almost certain to produce a mis-match between the teaching and the ultimate needs of the students, since the principles are likely to prevent the use of the full range of texts that the student needs (Davies and Greene 1982). To return to our hypothetical student preparing to work in a Ministry of Foreign Trade, technical specifications may be rejected as 'too technical' or 'too boring', while recordings and transcripts of business negotiations by native speakers would, even if available, be dismissed as 'too difficult' or 'too long'.

With the TAVI method, on the other hand, the selection of texts will depend on whether the learners' purpose is immediate or deferred. In the former case, where possible the texts will be selected not by the language teacher but by the students themselves (Johns 1980) or by their subject teachers (Davies and Green 1981), the criterion being that the texts are essential to the students' current tasks (that is, they have *value* for the student), and are proving difficult to understand without some assistance. Value may be measured by the extent to which they match the needs of the students' specialisation: what the students *need* to know. From this point of view it is important to remember that a student who is to become a teacher of English has as much of a specific purpose in learning the language as, say, a student of science and engineering: texts of use to such a student would cover such areas as basic concepts in linguistics, sociolinguistics, language acquisition and language-teaching methodology. Texts in these areas have of course an immediate value to the trainee teacher in that they derive directly from the academic syllabus being studied. The trainee teacher also has a deferred vocational purpose in that one day he or she will become a classroom practitioner required to act as a model of communication in English (Willis 1982). From that point of view, texts of value would include (transcripts of) authentic classroom interaction.

Two general points might be made here about value in relation to a delayed need. Firstly, while the value of a text may be apparent to an outside observer - for example, to someone undertaking a Needs Analysis - it is less likely to be obvious to the learner. To that extent, our teaching has to be *about* the need itself. We cannot as a matter of course expect a learner to be motivated by a situation which he or she will not have to face for some years to come: it is part of our task to make that situation as concrete and graspable as possible. Secondly, while with an immediate need our primary attention will be given to the *content* of the text, it is natural that with a deferred need we should focus to some extent on the *process* by which that content is acquired. From the point of view of the learner, the emphasis may - as is the case where needs are vocational rather than academic - be on *doing* rather than *knowing*. Despite these possible differences in emphasis, we believe that the TAVI method as outlined here can cater for deferred needs as fully as it caters for immediate needs.

Topic-Types

What criteria other than value determine text selection in the TAVI method? Syntactic and lexical grading will be taken into account, but it is not the only criterion, nor is it the determining one as it is in the TALO method. The objective of the TAVI approach is to provide students with the experience of dealing with the full range of authentic texts they are likely to encounter in their studies. In seeking to achieve this objective, the approach makes use of the notion of *topic-type* (Davies 1982 and 1983) sometimes called conceptual frame (Fillmore 1976).

The topic-type hypothesis is as follows. While it is possible to envisage an unlimited range of *topics* which might be identified in ESP texts, there is a strictly limited set of *topic types.* A topic-type can be defined by means of its 'information constituents' - certain categories of information which consistently co-occur over a wide range of different topics.

For example, the following topics appear on the surface to be quite unrelated: a suspension bridge, a flowering plant, a skeleton, a blast furnace. Nevertheless, in a general sense they are all about the same sort of thing: a *physical structure* of one sort or another. Furthermore, in practice, descriptions of such physical structures consistently provide information which falls into the following categories:

1 the *parts* of the structure
2 the *properties or attributes* of the parts
3 the *location* of the parts
4 the *function* of the parts.

Moreover, texts describing physical structures not only give information which falls into these four categories or slots, but (virtually) no information of any other kind. This is illustrated in the 'matrix' analysis of a typical physical structure text:

> *A tooth has three regions: the crown is the part projecting above the gum, the neck is embedded in the soft gum and the root is out of sight anchoring the tooth in its bony socket. Inside the tooth is a fairly hard material which contains some living tissues. This is the dentine. The dentine cannot withstand wear, so in the crown and neck it is covered with a layer of hard, non-living enamel. The dentine in the root is covered with a substance called cement, which helps to fix the tooth in its socket. Inside the dentine, in the centre of the tooth is a hollow pulp cavity containing nerves, a small artery and a small vein.*
>
> from Ewington E.J. and O.F. Moore (1971) *Human Biology and Hygiene,* London: Routledge and Kegan Paul.

Analysis

STRUCTURE/ PART	*LOCATION*	*PROPERTY/ ATTRIBUTE*	*FUNCTION*
A tooth-			
three regions-*		has three regions-	
the crown-	projecting above	is the part-	
the part-*	the gum-		
the gum-*			
the neck-*		soft-*	
the gum-*	in the soft gum	is embedded-	
the root-		is out of sight-	anchoring the tooth in its
bony socket*-	in its bony socket-	bony-*	bony socket-
the tooth-*	Inside the tooth-	is a fairly	
a fairly		hard material-	
hard material-*		which contains	
		some living tissues-	
This-		is the dentine-	
the dentine-*			
The dentine-		cannot withstand	
		wear-	
the crown and	in the crown and	so... is covered with	
neck-*	neck-	a layer of hard non-	
enamel-*		living enamel-*	
The dentine-	in the root	is covered with	
the root-*		a substance called	
cement-*		cement-*	
the tooth-*			which helps to
its socket-*			fix the tooth
			in its socket-
the dentine-*	Inside the dentine		
	in the centre of the		
the tooth-*	tooth-	is a hollow pulp	
		cavity containing	
hollow pulp cavity-*		nerves, a small artery	
nerves-*		and a small vein-	
small artery*			
small vein*			

Notes

1. (-) indicates the end of a surface structure string.
2. entries marked (*) are items which occur in more than one slot i.e. they simultaneously realise two categories. For instance, *gum* realises Location in the prepositional phrase *in the soft gum*, but as a single lexical item is also categorised as Part. Likewise, *soft* occurs as part of the prepositional phrase for Location, but it also defines an Attribute.

The topic-type *Physical Structure* is one of the set of twelve topic-types proposed by Davies (1982) and listed below:

TOPIC TYPE	INFORMATION-STRUCTURE CONSTITUENTS
physical structure	part → location + property + function
process	state or form of object/material → location + time or stage + instrument or agent + property or structure + action
characteristics	defining features or attributes → tests or measures of + data + exemplar or group
mechanism	physical structure → action + object/material
theory	hypothesis → context + test of + results + interpretation
principle	law or principle → conditions + instances + tests/measures + application
force	source or composition → conditions + instances + tests + effects
instruction	step or procedure → materials + apparatus or measure + caution or condition + result + interpretation
social structure	member or group → location + conditions + role or responsibility + assets or outcomes
state/situation	participants → conditions + location (time and place) + effects + event or innovation
adaptation	species/exemplar → environmental conditions/effects + adaptive feature/mechanism + function
system/production	producer or production system → product + location + requirement + distribution

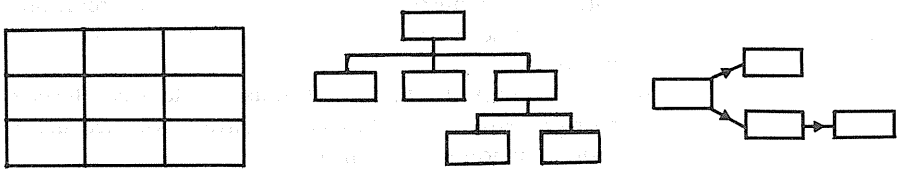
Notes

1. →Constituents to the *LEFT* of the arrow are *OBLIGATORY* and can be regarded as constants. Constituents to the *RIGHT* of the arrow are optional. They can be regarded as the variables which define the obligatory constituents. Conditions for optionality are assumed, but no predictions are made about what these are.
2. + indicates *and*, not order.

This set of topic-types is neither definitive nor exhaustive, but can be used in the TAVI method as a basis for selection and/or grading of texts. Where selection is carried out by the teacher, attention to topic-type gives a principled basis for judging how far the 'teaching texts' reflect the range of texts a student will need in a particular subject-area. For instance, students studying engineering and physical sciences will need experience at least of Physical Structure texts, Mechanism texts, Process texts, Principle texts, and Force texts. Students in all subject areas will need experience of Characteristics texts, Adaptation texts, and Theory texts - which for students of the Social Sciences will need to be supplemented by work on Social Structure and State/Situation texts.

The importance of topic-type for grading is threefold. In the first place, it suggests a progression from texts which have relatively simple or skeletal information structures (eg Physical Structure, Characteristics, Principle) to texts which have more complex structures (eg Process, Force, Theory).

Secondly, the topic-type determines in part the sort of *graphic representation* that can be made of the text. Two types of graphic representation may be distinguished: the *analog* representation and the *network* representation. Typical analog representations are pictures, plans or graphs. An analog representation of the short structure text seen earlier might take the form of a cross-section of a tooth: and such representations are in general particularly useful for structure texts and mechanism texts. The more abstract network representation attempts to show the relationships between the concepts in the text. There appear to be three basic types of network representation: the *matrix*, the *tree-diagram* and the *flow-diagram* (Johns 1980):



Matrix ***Tree-diagram*** ***Flow-diagram***

Of these, the matrix seems to be the most generalisable, with the other two having a more limited field of application: the tree-diagram for representation of Characteristics texts and sometimes of Theory texts, and the flow-diagram for Process, System/Production and State/Situation texts.

Thirdly, topic-type grading provides teachers with a conceptual framework within which increasingly more complex linguistic realisations can be investigated, since the topic-type determines a good deal of the detailed linguistic structuring: the use of stative verbs in the description of structures, for example, or the passive voice in the description of processes. Furthermore, boundaries between topic-types are commonly signalled by grammatical choices (in particular, tense, mood and clause relationships).

Three further points need to be made about selection and grading: these relate to *length*, to *completeness* and to *authenticity*. While 'short texts only' may be appropriate in the early stages of a course, we would wish to increase the length of texts gradually until they approximate to the length of a typical reading task in the situation for which students are being prepared: in the case of a scientist, for example, this might be the length of a research report. Secondly, we would also wish (for reasons which will appear later) to have a proportion of texts which are *incomplete* in that they end with certain problems left unanswered and certain information left unsupplied. And thirdly, we would wish as early as possible to introduce authentic, unmodified texts. It is important to note, we believe, that with authentic texts the teacher's responsibility for grading does not disappear: it is, however, transferred from control of the detailed linguistic features of the text to control of the difficulty of the tasks the student is expected to carry out and the amount of assistance he is offered (Johns 1974).

2. Preparatory Activities for the Reading of Text

Turning to the second aspect of our five-point comparison of TALO and TAVI - when we consider preparatory activities for reading, we find that these are usually lacking in the TALO method except, perhaps, for a list with translations of the new vocabulary to be learned. In the absence of any preparatory activities, both teacher and students are left to their own devices in the most important activity of all: the puzzling out of what the text means. It is inevitable that teachers should feel insecure in this situation, and should be driven back on using fragmented text-as-linguistic-object activities.

With the TAVI method, on the other hand, the activities undertaken before the text is studied are of crucial importance. They act as direction-finders, awakening interest and establishing the purpose for which the text is to be read, the sort of information that may be found in it, and the value that information may have for the student. In other words, they are supplying something like the 'situational context' that is present when a self-taught learner tries to puzzle out a text that he needs to read for a real and immediate purpose.

There are many types of preparatory activity that are suitable, and we can indicate no more than a few of them here. One very simple activity is for the students to take the 'comprehension questions' that are usually placed at the end of a text in a coursebook, and to attempt to answer them *before* the text is studied. This activity gives a clear purpose to the subsequent reading, in that the students will be led to look for the relevant information and to check it against their own answers. Better still, the teacher may draw up a small quiz of 'pre-questions' on the subject-matter of the text, or get the students to draw and/or label a diagram relating to the text - the students' replies to be checked subsequently against the text. Some of the questions in the quiz may ask about points *not* covered in the text, since it is important in reading for information to recognise when the information sought for is absent, as well as when it is present. Or again, the activity may centre on a problem, the answers to which can later be checked against the text. A rather freer activity is to give the students the title of the text and/or the first sentence, and to get them to discuss what they would want to learn from, and expect to find in, a text with such an opening. Once a teacher and his or her students are accustomed to using preparatory activites, many more possibilities will suggest themselves. What is important is for the teacher to use the framework of the topic-type to select those points which are to be focussed on. In the first place he will direct their attention to the slots that will be filled with information from the text, and will then be getting his students to ask each other and discuss such questions themselves.

3. Work with Text

When we turn to teaching/learning activities with text in the TALO method, we find that these focus on *language* rather than information; on what is *not known* rather than what is known; and on points of *detail* rather than overall meaning. A typical lesson starts with the teacher working slowly through the text, looking for and asking about points of linguistic detail, and in particular asking questions about difficult syntax and lexis and demanding exact answers. If there is any discussion of the overall meaning of the text, that will be postponed until after the work on the text is complete. There can be few teachers of ESP (ourselves included) who have not perpetrated such lessons at

some time in our careers, and few teachers or students who have not found that the procedure produces an intense sensation of tedium. The most serious charge against the method, however, is not that it is tedious: it is that it may be actively interfering with the formation of good language-learning strategies. Research by Carol Hosenfeld has shown that the reading methods of successful foreign language learners tend to be very different from the methods used by non-successful learners (Hosenfeld 1977). When the non-successful learners she studied came across an unfamiliar word, they tended to look it up in a dictionary. As a result the text was broken up into the random fragments that lay between the visits to the dictionary: they would therefore be unable to pay attention to or remember the overall meaning of the text; absence of any grasp of overall meaning hindered their ability to guess an unfamiliar word or to realise that it can be 'skipped' without damage to the meaning; and without the ability to guess or skip they were thrown back on the dictionary. In other words, they were caught in a vicious circle of incomprehension which reinforced their feeling of failure and lack of self-confidence. The successful language-learners in her study, on the other hand, paid attention to the overall meaning of the text, had developed the ability to guess or to skip using information from the rest of the text, and used the dictionary far less often. The lessons to be learned from the research are we believe inescapable, and should be considered seriously by all language-teachers: are we not, if we use the TALO method in class (and thereby set it up as a model for our students to follow in their study outside class), teaching exactly those habits which are likely, except with our most gifted and hard-working students, to lead to *non*-success?

The focus of activities with the TAVI method is exactly the reverse of that used with the TALO method: that is to say, we shall concentrate in the first place on *information* rather than language, on *overall meaning* rather than points of detail, and on what is *known* rather than what is not known. As has already been indicated, the preparatory activities will have directed the students towards the information to look for in the text. We believe that there is advantage to be gained from giving basic training in the idea of topic-types, and getting students to mark in the text the information to be placed in the different slots. The students can then complete a simple network representation of the information in the text, to show graphically the links and relationships between the different pieces of information. Readers new to the idea of a network representation may care to try completing the following 2 x 5 matrix, by supplying one or two key words in each cell to represent the information in this paper:

	TALO	TAVI
Selection of text		
Preparatory activities		
Work with text		
Classroom interaction		
Follow-up activities		

It will be seen that the completed matrix gives an immediately-graspable representation of the overall argument of the paper, and that it also sets out certain relationships more clearly than the text of the paper itself. For example, by looking vertically down each column the relationships between the different aspects of each method may be more readily apparent than they are from the paper itself where - for the sake of contrasting the two methods - the matrix is 'negotiated horizontally' (Johns 1980).

When the overall meaning of the text is clear, the activities can then move towards points of surface detail. Here the emphasis should be on the relationship between the surface structure and the function it performs in the text. For example, if this paper were to be used at an advanced level as a classroom text (and we are not suggesting it should be so used!), we might start by getting the students to find answers to the following questions, in relation to the text as a whole or a particular section:

1. What are the grammatical/lexical signals used to show the *contrast* between the two methods?
2. What are the grammatical/lexical signals used to show that the writers *do not recommend* the TALO method?
3. What are the grammatical/lexical signals used to show that the writers believe that the TAVI method is a) *possible* and b) *to be recommended?*

When students encounter difficulties of vocabulary and structure, we would encourage them to guess meaning from the context - that is to say, the overall context of the whole text (which has already been established) and within that, the immediate context. It is one of the many tasks of a teacher in the TAVI method that he should try to get students to use the dictionary mainly to check guesses, and to be satisfied that certain items will be left unexplained in detail, provided that the meaning of the text can be understood without them. Only at the *end* of the activities should the teacher do what is done *first* with the TALO method, which is to explain whatever residue remains of difficult words and expressions - including those 'everyday' words such as *power, mass, force, significance* which may take on a specialised meaning in a technical context.

We realise that this may be the most worrying of all the features of the TAVI method to a teacher more used to TALO, since it requires him to make a radical revision of his previous classroom practices. There are two points which we would make to such a teacher. First, the number of words and expressions to be explained will be very much smaller than with the TALO method, since most will have 'explained themselves' by reference to the context. Second, even in terms of the goal of TALO (the learning of new words and syntax), TAVI is likely to be more effective since there is evidence that words learnt in a pre-established context will be rememberd better than words learnt without such a context (Bower and Clark 1969). It is likely also that grammatical structures that have been studied within their communicative setting will also be more securely grasped.

4. The Type of Teaching/Learning Interaction Involved

Not only does the TAVI method require a reversal of the usual order of activities in the classroom, but it also implies a reversal of the usual pattern of classroom interaction.

TALO is associated with two styles of teaching: a monologue by the teacher, the students taking notes; or a dialogue in which the teacher asks the questions, the students reply, and the teacher assesses and comments on their responses (i.e. gives feedback). At best, the role of the student with both these styles of teaching is passive: he is given very little opportunity to speak - or, indeed, very little need to think. With the TAVI method, on the other hand, our aim is to get the students to work on the text in groups of two or three within the clear framework of the activities described above. The fundamental argument for groupwork is not that it is more enjoyable for the students (which it certainly should be), nor even that it gives them an opportunity for real communication in the classroom - communication which in the initial stages may be in the mother tongue, but into which the target language can be gradually introduced. These two benefits are, we believe, very important. However, the most important argument for groupwork is that it can provide a model for the students' individual self-study outside the classroom, where most of their real learning is likely to take place. That is to say, the activities in the group (with the students organising their own study of the text within a given framework, asking each other questions, testing their hypotheses against the text, and reaching agreement) form a model for the sort of 'internal dialogue' which should be taking place when a student studies a text by himself. From this point of view, the teacher-centred activities of the TALO method are largely inappropriate.

5. Follow-up Activities to the Reading of Text

Our fifth comparison between the two methods concerns the sort of follow-up activities that are involved: that is to say, what is done *after* the text has been worked through. For the TALO method, many types of follow-up activity are used, of which the most characteristic are comprehension questions and grammatical and lexical exercises. With the TAVI method, the focus will be on those actual uses which the spontaneous self-taught learner would make of text. These may be classified under the four general headings of (5.1) *transfer of information*,(5.2) the *application or explanation of information*, (5.3) the *extension of information*, and (5.4) the *application of techniques.* One or more of these may be used in follow-up activities.

5.1 Transfer of Information

By transfer of information we mean the representation of some or all of the information in the text in some other form. We have already mentioned the most generally useful type of transfer - the diagramming of information from the text in the form of a network representation. That is not the only form of transfer which may be useful, however. For example, someone reading a text for information in a foreign language often needs to make a summary of it in his first language; and first-language summary-writing using the completed framework from the previous activity rather than the text itself is, we believe, an excellent way of getting the students to consolidate their earlier work. Likewise, summary-writing in the foreign language will develop a valuable skill for their later use of the language. Students will probably need considerable help in the earlier stages of summary-writing if they are to get beyond the obvious expedient of copying out sections of the original text. An effective exercise in the early stages is for the teacher - or the textbook - to provide a 'gapped' summary, the students being required to fill in the missing words. As the students make progress, the extent of the gapping can be gradually increased.

5.2 Application or Explanation of Information

By application or explanation of information we mean that the students should, either in or outside the classroom, use what they have learned from the text to carry out a task. Which tasks are appropriate depends above all on the ultimate purpose for which the students are learning English, and the use they will then be making of texts in English, so it is possible to do no more than indicate some of the possibilities here. They may use the information to analyse data, to interpret a situation, or to solve a problem. For example, students who have studied an extract from a medical textbook about a disease or a group of diseases may be required to use that information to suggest diagnoses for the summarised case-histories of two or three patients. Such tasks require the students to apply the general principles contained in a text to a real-life example: that is to say, to reason *deductively* - from principles to examples. It is also possible where the text describes phenomena without giving a full explanation of them (as, for example, with a case study), to require an *inductive* explanation of the phenomena in terms of general principles. It should be apparent that the systemisation of the information in the text that takes place in the earlier work on it represents an essential first step towards thinking about the principles involved.

It is in the planning of achievable and worthwhile tasks, whether of application or explanation, that the collaboration of the ESP teacher and the subject specialist is most important, since the ESP teacher is unlikely to have the background knowledge to know exactly what use would or could be made of information, or how far students may be expected to discover the underlying principles; and he can all too easily fall into the trap of setting tasks which are either trivial or over-ambitious.

5.3 Extension of Information

Our third type of follow-up activity is the extension of information. By this we mean that the text should 'direct' the student towards a further text or texts which will extend or complete information derived from the first text. It is for that reason that we have suggested earlier that a proportion of the texts used in class with TAVI should be *incomplete* in that they require the reading of a further text (which may, indeed, be a continuation of the classroom text), to give a complete picture when the information from the follow-up text is fitted together with the information from the classroom text (a procedure which is sometimes called 'jigsaw reading'). The follow-up text may be specially prepared by the teacher or supplied by the coursebook. It is also important to direct the students towards sources of information outside the classroom, and in particular to books and journals in the library of the students' school or college. In this way we can develop their *reference skills*: their ability to seek out information on their own account, including the ability to use such 'signposts' to sources of information as indexes, bibliographies and catalogues. From this point of view it is important, also, that there should be available, in the main students' library or the classroom library, a number of readily-accessible sources of reference materials in the foreign language (e.g. children's encyclopaedias and Ladybird series of readers) for beginning and elementary students.

5.4 Application of Techniques

The fourth type of follow-up activity with TAVI is the application of the techniques developed in the classroom to other texts in the students' subject areas. This is important for three main reasons. Where - as will often be the case - the class contains students from a number of different subject-areas, it is essential that they should see how they can apply the techniques learnt there to texts drawn from their own discipline. Secondly, this aspect of the follow-up work will be the most important indication to the teacher of how successful the classroom work has been, since it is an important assumption of the TAVI method that it is generally applicable: that is to say, that the techniques can be used, and used immediately, on a wide range of apparently very different texts. Where students are finding difficulty in applying those techniques, that is an indication that some aspect of the implementation of the method needs to be revised. Thirdly, their ability to use those techniques in texts they have selected themselves is likely to have a very important effect in increasing the students' self-confidence and their ability to work independently, which is, above all, the major aim of the whole method. In this way, what takes place in the classroom can lead our students towards that massive reading for information and for pleasure which is the secret of all effective foreign language-learning.

APPENDIX: SAMPLE LESSON-PLAN FOR TAVI METHOD

The following is a series of text-based activities for a group of mixed-discipline students preparing to read English journals/textbooks in their specialist subject areas.

1. Basic Training in Identifying Topic-Type: Physical Structure

Student-preparation for lesson: Students are asked to find texts in their specialist subject which describe the parts and functions of a physical structure, for example: a bridge, the heart, a flowering plant, a blast furnace.

Teacher-preparation: Selection of exemplar for lesson, e.g. the 'kidney' texts and diagram below. (Texts and diagram are not distributed to the students until stage 3.)

The Human Kidney (Text 1)

The human kidney is bean-shaped and about 12 cm long by 7 cm wide. The renal artery carries blood to the kidney; blood leaves by the renal vein. A thin tube called the ureta comes out of the concave side of each kidney and extends downwards to a large single bag called the bladder.

The kidney itself consists of three main regions, or zones. The first is the dark-coloured outer zone, called the cortex; the second is a paler-coloured inner zone called the medulla. Within the medulla is the third zone, the pyramids, consisting of several cone-shaped areas. Urine drips continuously from the tips of the pyramids into funnel-shaped spaces formed by the top of the ureta.

Inside each kidney are about one million tubules, each of which is about 3 cm in length. The tubules begin in the cortex of the kidney. Here, each one is expanded into a round, cup-shaped object known as a Bowman's capsule. This is only 0.2 mm in diameter. A tiny ball of inter-twined blood capillaries called the glomerulus lies within each Bowman's capsule.

As each tubule emerges from the Bowman's capsule on the side opposite to the glomerulus, it forms a complicated series of coils and loops before joining a wider collecting duct. Collecting ducts collect urine from the kidney tubules and transport it straight through the medulla of the kidneys to the tips of the pyramids.

Functions of the Kidney (Text 2)

The kidney has two major functions - to filter the blood, and to re-absorb useful processed substances from the blood.

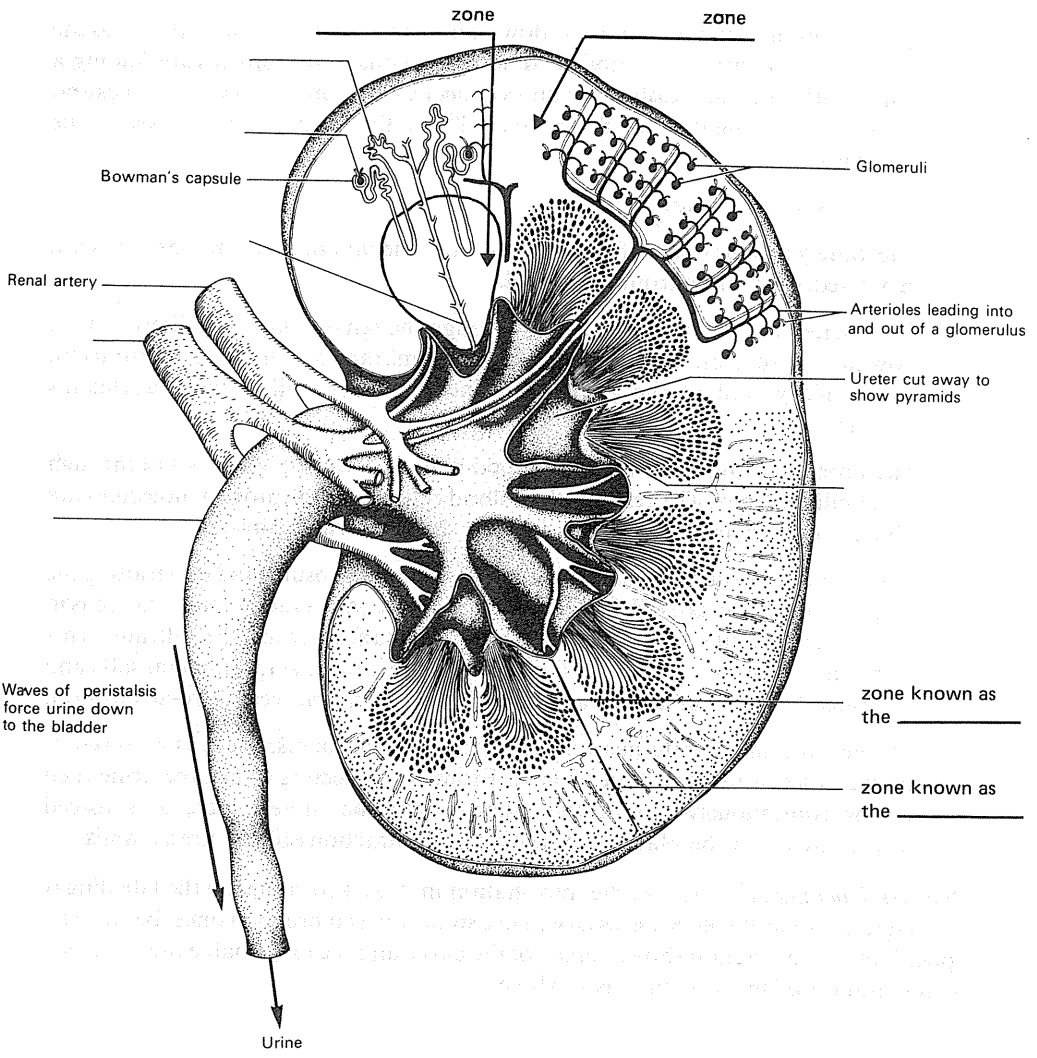
Oxygenated blood enters the kidney through the renal artery. It is filtered in the Bowman's capsules. Two layers of living membrane are involved in filtration: the capillary wall of the glomerulus and the inner wall of each Bowman's capsule.

The process of filtration involves blood being forced at high pressure through the capillary walls. The result is that blood cells and large protein molecules are filtered out, leaving a clear liquid called the glomerular filtrate.

The glomerular filtrate passes out of the Bowman's capsules and down along the kidney tubules towards the collecting ducts. As it passes along this route, cells in the kidney tubule walls extract useful substances from the filtrate. This extraction of useful substances (such as glucose, amino acids, mineral salts and vitamins dissolved in a large amount of water) is the process of re-absorption.

By the time the filtrate has reached the collecting ducts, the waste excretory liquid called urine has been formed. From the collecting ducts, the urine then drains continuously out of the kidneys into the ureter. Here it is forced downwards into the bladder by wave-like contractions of the ureter walls.

Diagram labelling activity: Use the information in Text 1 to complete the labelling of the diagram. *Note*: It will be necessary to use some labels more than once, because the upper half of the diagram shows *details* of the parts, and the lower half a more realistic representation of the structure as a whole.



Diagrammatic Representation of Human Kidney Structure.

(Based on diagram in Beckett B.S. (1976) *Biology: a Modern Introduction,* Oxford: Oxford University Press, p. 121 reproduced with permission).

Training in Classroom: Student selections are discussed with the teacher. *Initial focus*: range of different topics. *Major focus*: similarities in types of information given in each text.

2. Basic Training in Using Conceptual Framework of Texts

Students are told that four types of information can be used as a framework for studying Structure texts. This is to be illustrated by means of a text selected by the teacher: The Human Kidney.

3. Preparatory Activity: Pre-questions

[Text, diagram and dictionaries are not available to students at this stage.]

What is known about the structure and function of the kidney? What parts are known by L_1 names? English names? What goes on in the kidney? Can a preliminary diagram be drawn on the blackboard?

4. Groupwork on Text Using one 'Slot' of Framework: Location of Parts

[Students now have copies of Text 1, and the partially-labelled diagram.]

Students work in groups of two or three. They underline in the text all the names of parts. Using the information, they locate parts in the diagram and complete the labelling of the diagram, making use of supplementary notes given on the diagram itself.

An *alternative*: A partially-labelled diagram is available to students, but not the text or dictionaries. Prequestions and groupwork as above.

5. Pooling Ideas and Checking Facts (I)

With the teacher, students check the labelling of the diagram, discuss doubtful cases, and search for evidence to support/refute decisions.

6. Self-correction

Students correct their own versions if they have made errors.

7. Using Complete Framework to Extract and Categorise Information

Students now use text information to complete the following table.

Part	Location	Property	Function

8. Pooling Ideas and Checking Facts (II)

With the teacher, students check that the cells of slots/columns are appropriately filled with information from the text.

9. Identifying Information not Given in the Text

The focus now is on 'empty' cells in the table. How can they be filled by inference, and through the use of additional sources of information? Students are told that they will be given opportunity to use an additional text in a follow-up activity (See 11. below).

10. Basic Training in Analysis of Surface Structure of Text

Attention is now focussed on the way in which information is realised in the surface structure. The particular feature of surface structure selected for attention will vary with the teacher's purpose. Only *one option* of several is given here:

10.1 *Introduction of Technical and Subtechnical Vocabulary:* Students are alerted to three ways in which new terms are introduced:

(a) through definition or description, followed by the technical term, e.g., *a paler-coloured inner zone called the medulla.*

(b) through introduction of the term, followed by definition or description, e.g. *the pyramids which consist of several cone-shaped areas.*

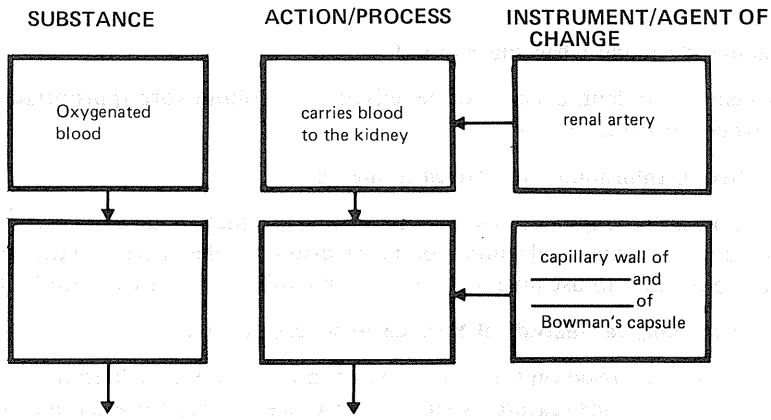
(c) without definition or description of term.

10.2 *Groupwork on surface structure of text:* Students now mark in the text examples of each way of introducing new terms, then list them in columns with grammatical categories for each entry labelled.

10.3 *Pooling of ideas and checking facts with teacher:*Teachers and students check that all instances are covered and grammatical categories are correct. They discuss the merits and demerits of (a) and (b) from the point of view of writing and reading. They discuss how to deal with texts where (c) occurs. Should it occur in the students' own writing?

11. Follow-up Activity: Extending Knowledge, and Problem-solving

The follow-up activity is explained to students. They are given copies of text 2. They will find much of the 'missing information' in this about the *functioning* of the parts of the kidney. Using this, they will be able to complete the original table. What is also given in Text 2 is a description of a *process*. Here the focus should be on *changes in the form* of a substance (in this case, blood, as it is filtered and re-absorbed by the kidneys). Students are asked to show this by constructing a flow-diagram along the lines indicated below. 'Branches' are to be introduced as required, 'boxes' can vary in size and arrows show direction sequence.



12. Follow-up Activity: Transfer of Strategies Using Conceptual Frames

Students analyse their own selections, using the structure framework, completing a table, and drawing a flow-diagram for a Process if required.

13. Follow-up Activity: Using Related Resources and Summarising

Students use the library to find further references on a selected topic. After analysing information from at least two other sources, students write a summary. In writing the summary, particular attention should be paid to achieving considerate (i.e. helpful to the reader) introduction of technical and sub-technical terms.

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