
Using Techniques Well: Information Transfer

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Teaching techniques are means of achieving learning goals. The goals that they achieve and the effectiveness with which they achieve these goals depend on how skilfully the techniques are used. The purpose of this article is to show the questions that a teacher can ask to check the effectiveness with which a technique is used. For the purpose of this demonstration the information transfer technique will be used. However, the questions could be applied to any other teaching technique.

The Information Transfer Technique

An information transfer exercise involves the transfer or change of information from one form to another. During the transfer the information remains substantially the same but the form of the information changes. In a receptive information transfer exercise learners change spoken or written information into a diagram, chart or picture. By making this change the learners show that they have understood the information and that their understanding is deep enough to adapt it in some way. Here is a simple example. The learners listen to a description of a flowering plant while looking at a diagram. While listening the learners label parts of the diagram. This is an information transfer exercise because the information about the plant is presented in a linguistic form and then the same information is put into a diagrammatic or semi-diagrammatic form (Palmer, 1982).

One excellent feature of the information transfer technique is that the nature of the exercise itself is a justification for its use. That is, information transfer is an excellent learning strategy because it requires learners to process deeply the information that they are dealing with and to deal with two types of encoding of that material (Crak & Lockhart, 1972; Pavio, 1971).

Information transfer exercises can be used productively. That is, the learners look at a diagram and then use this as a basis for writing or speaking. This productive use often works best after the learners have had some experience of the receptive equivalents because these can act as a model or example of the production required.

Attention on Language Content

Most information transfer exercises focus the learners' attention on the details of the information used in the exercise. The flowering plant example given before is of this type. There are numerous other possi-

lities. For example, the learners listen to a conversation between a landlady and a new boarder and label a plan of the rooms of the house using the information conveyed in the conversation. Similarly, the teacher talks about her family or an imaginary family and the learners complete a family tree diagram. Palmer (1982) has an excellent list of other suggestions classified according to the type of diagram used. He uses the categories of maps and plans, grids and tables, diagrams and charts, diaries and calendars, and miscellaneous lists, forms and coupons. The following suggestions add to Palmer's examples.

- 1 The learners listen to a report of a robbery and draw the robbers' route through the house on a diagram of the house.
- 2 The learners read descriptions of two languages and note their characteristics on a chart. The chart includes categories like *script*, *use of stress*, *word building processes* ...
- 3 The learners listen to a recorded conversation between a teacher and a parent and put grades and comments on a child's school report.

The most obvious learning from information transfer relates to the information in the activity. After they do the activity on the Flowering plant, the learners would have some knowledge of the parts of a Flowering plant and the jobs that each part does. Similarly, after doing the activity about the landlady, the boarder and the plan of the house, the learners would be likely to remember the particular plan of that house. From this point of view, the activity on the Flowering plant is a better use of the information transfer technique than the activity on the plan of the house, because the knowledge gained about the Flowering plant is more useful knowledge of the world.

Another source of learning is the vocabulary and grammatical items contained in the spoken or written text, particularly those items that are focused on in the information transfer activity. Research on vocabulary learning indicates that some special attention needs to be given to vocabulary if there is to be measurable learning. This can be done either by putting the vocabulary to be learned in places in the text where most information occurs (Herman et al, 1987), or by briefly commenting on particular vocabulary during storytelling (Elley, 1985). To make the most of this learning the vocabulary would need to be high frequency or specialized vocabulary which the learners would be sure to need again in their use of English.

So far the questions we have tried to answer about the use of the information transfer technique are:

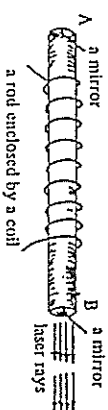
- 1 How will the language items learned today help with tomorrow's language use?
- 2 Is the information presented in the activity useful?
- 3 How much control do the learners have over the learning?

Attention on Discourse

A generalizable feature, particularly of formal written text, is the way in which it is organized. In recent years there has been considerable study of text organization, particularly at the level of the paragraph or a small group of paragraphs (Hoey, 1983; Zuck & Zuck 1984). Let us look at an example of such analysis. The following text from Barnard (1972) can be analysed using the physical structure pattern listed among others in Johns and Davies (1983, p. 7).

The operation of the laser is based on theories which form part of the science of physics. These theories relate to the effect of electricity and high waves on physical substances. For the present we will discuss the physical construction of the laser and a few of the practical applications which have been found for it.

What does a laser look like and what can it do? In appearance it is similar to an enormous pencil or an unusual type of gun. It is a narrow object, shaped like a cylinder, which can send out a powerful, intense stream of light.



The instrument is basically a rod (which can be made of one of a number of transparent or semi-transparent materials) contained in a long narrow tube or cylinder. This cylinder is actually an electric coil which can pass electricity into the rod. There is also an outer safety covering, not shown in this diagram.

Both ends of the rod (A and B) are highly polished and serve as mirrors. The mirror at A has a reflecting surface which faces inwards towards B. The back of the mirror at A is not transparent and no light can pass through it. The mirror at B also has a reflecting surface, facing A, but this surface is partly transparent. Electricity passing from the coil into the rod produces flashes of light which excite the material of the rod until it shoots out a powerful beam of light at B, the transparent end.

To make it easier for learners to see the patterns involved in the text, the first parts of the information transfer chart have been filled in.

PART	LOCATION	PROPERTY	FUNCTION
cylinder	around the rod	like an electric coil	passes electricity to the rod
rod			
The A end of the rod			
The B end of the rod			

This same physical structure pattern can be used with a text on the description of an ant colony, the administrative structure of a university, and the various pages, title page etc. that go to make up a book. The learning from this use of the information transfer exercise can be of three types, (1) developing familiarity with language items used in the text, (2) mastery of the content of the text as a result of having to process it deeply, and (3) awareness of the physical structure pattern so that it can be applied to other texts. This third type of learning is of course the most generalizable and so of most interest to the teacher. Other patterns include the problem-solution-evaluation pattern (Hoey, 1983), forecasting (prediction-time-source-basis-range-reassessment-modification) (Zuck & Zuck, 1984), process, characteristics, theory, principle, instruction, state/situation, adaptation (Johns & Davies, 1983; Davies & Greene, 1984). Rhetorical patterns such as comparison and contrast, exemplification, and elimination of alternatives can also be used as a basis for information transfer activities.

A Self-questioning Strategy

This focus of attention on the discourse of the text can be the basis for the use of a self-questioning strategy which allows learners to create their own information transfer diagrams (Franken, 1987). We have seen how the physical structure topic type can apply to a variety of texts. The same information transfer diagram could be used with all physical structure texts. Similarly, one information transfer diagram could be used for a variety of texts of the process topic type (Johns & Davies, 1983; Davies & Greene, 1984). Here is an example using a part of an article from the *New Zealand School Journal* (2, 2:1981).

Making Bagpipes by David Begg

Alistair Cuthill makes bagpipes. He works in a small workshop in Wellington. Once, Highland bagpipes were mainly made in Scotland.

Now they are made in many parts of the world, as Scottish people have gone to live in many different countries.

Alistair is holding a block of wood which will be used to make one of the drones. The wood is called "Hignum citae", and it is one of the hardest woods in the world. The owner of the workshop bought it from a shipyard, where it was used to make propeller shafts.

The wood used for the bagpipes has to be very hard, because the pipes have warm moist breath going through them. A soft wood might expand and make the wrong notes.

First, Alistair has to cut the piece of wood into a round shape. To do this, he uses a fast-spinning machine called a lathe.

Then he uses a drill to hollow out the round pieces of wood and make them into pipes.

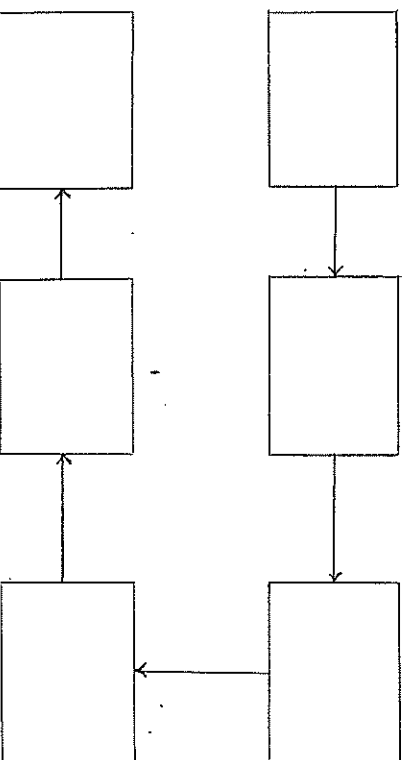
When working on a process text, learners should ask themselves the following questions

What are the steps and changes?

What causes the change at each step?

What are the results of the steps?

Much the same questions can be asked about a text on soap making, the life cycle of a butterfly, enrolling in a university, or assembling cars. A suitable diagram might look like this.



The questions that learners should ask themselves when reading (or preparing to write) a physical structure text would be,

What are the parts?

Where are they?

What are they like?

What do they do?

If information transfer exercises are based on categories that apply to a large number of texts or situations and the learners can turn these categories into questions that they use to create their own information transfer diagrams, then the technique becomes very powerful. It gives learners more control over their learning procedures. Research on the composing process (Hillocks, 1984) underlines the importance of this for writing.

There is an additional benefit. The ability to fit a text into an existing schema has a positive effect on learning unknown vocabulary contained in that text (Herman et al, 1987).

So, increasing the learning goals of an activity does not mean that each goal has less chance of being achieved. Instead, having high level goals enables the achievement of the goals which are more closely tied to one particular text.

The Three Questions

We have seen how the information transfer technique can be used in three ways. Each of these ways is related to one of the three questions, and positive answers to the questions in turn results in a more effective and efficient use of the technique. In the burglar example, the first question "How will the language items learned help with tomorrow's task?" could be answered satisfactorily if the teacher gave careful thought to the vocabulary and grammatical items used in the activity. In the flowering plant example, the first question and the second question "Is the information presented in the activity useful?" could be answered satisfactorily. Clearly, what is useful information will differ from class to class, but it is a feature that should always be considered. In the laser example, the first and second questions and the third question "How much control do learners have over their learning?" could all be answered positively.

In our use of teaching techniques we need to look carefully at what we are doing. We need to make sure that our activities are keeping learners busy and interested, but above all we need to make sure that they are directed at useful learning goals. By asking the three questions described in this article, teachers can go a long way towards doing this.

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