

# Patterned note-taking: an evaluation

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## Abstract

Patterned note-taking, as described by Tony Buzan (1974), is a technique of recording information in a spatial representation, which contrasts with the more common linear style. The effectiveness of patterned note-taking is said to depend on 1) writing down key words, and 2) being actively involved in the note-taking process. No research has been carried out which directly compares the effectiveness of patterned with linear notes. However, there is some evidence to suggest that writing down key words and actively transforming information helps retention when taking notes. Students wishing to know how to take patterned notes are advised to consider carefully before learning a strategy which has no real evidence to suggest it is any more effective than more conventional styles of note-taking. It is strongly recommended that students who do wish to proceed should consult Buzan's original study manual, for the technique is often seriously distorted by study advisors.

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## Introduction

Of all the empirical research that has been carried out on note-taking, very little has been concerned with the actual techniques or strategies that note-takers use, and their relative effectiveness. Out of twenty-four experiments manipulating note-taking conditions that have been traced in the literature, only two have actually compared two or more different note-taking systems (McHenry, 1969; Palmatier, 1971). Both these studies found no significant difference in the knowledge gained by any one particular system.

In spite of this lack of empirical evidence, study manuals continue to lay down specific guidelines about how students should take notes. Virtually all of these offer the same kind of advice. They recommend that students should use

headings, vary their lettering, number different points, indent paragraphs, use abbreviations and so on. Such advice is traditional and goes back to the time when study manuals first appeared. The position remained largely unchanged until 1974, when Tony Buzan introduced a dramatically different approach both to studying in general and to note-taking in particular. In the book entitled *Use Your Head* (1974), Buzan advocated a system of manipulating the space on the page when taking notes, instead of taking them in the more conventional linear fashion. This method he called patterning.

### **How to take patterned notes**

The main idea behind making patterned notes is that the student identifies the central argument or concept in the information presented and that this is represented by a key word or phrase placed in the middle of the page. From this central point it is possible to build up a structure using arrows, shapes, pictorial illustrations and lines which radiate out from the central concept in as many different directions as required. Figure 1 is an illustration of this approach, using the general theme of note-taking as a subject.

A similar method to Buzan's note-taking style was earlier described by Hanf (1971). This was called 'mapping' and was designed specifically to be a technique for obtaining information from prose material. Hanf advised breaking away from the conventional top-to-bottom and left-to-right procedures usually adopted in note-taking and suggested putting the central idea in the middle of the page and attaching subsidiary ideas concentrically. In this way, Hanf argued, it was possible to represent more complex inter-relationships than could be accomplished by the linear method. The similarities between this method and Buzan's are clear, but Buzan's contribution has been to give the notion of patterned note-taking greater impetus by extending it so that it is applicable to many different situations and not just to studying from textbooks.

### **Theoretical background to patterned note-taking**

The rationale behind Buzan's method is that although we are accustomed to information being presented in a linear sequence in speech and in print, the brain itself does not function in the same linear way. Any one word or image will produce a wealth of associations that are unique to an individual. The brain is, therefore, making complex

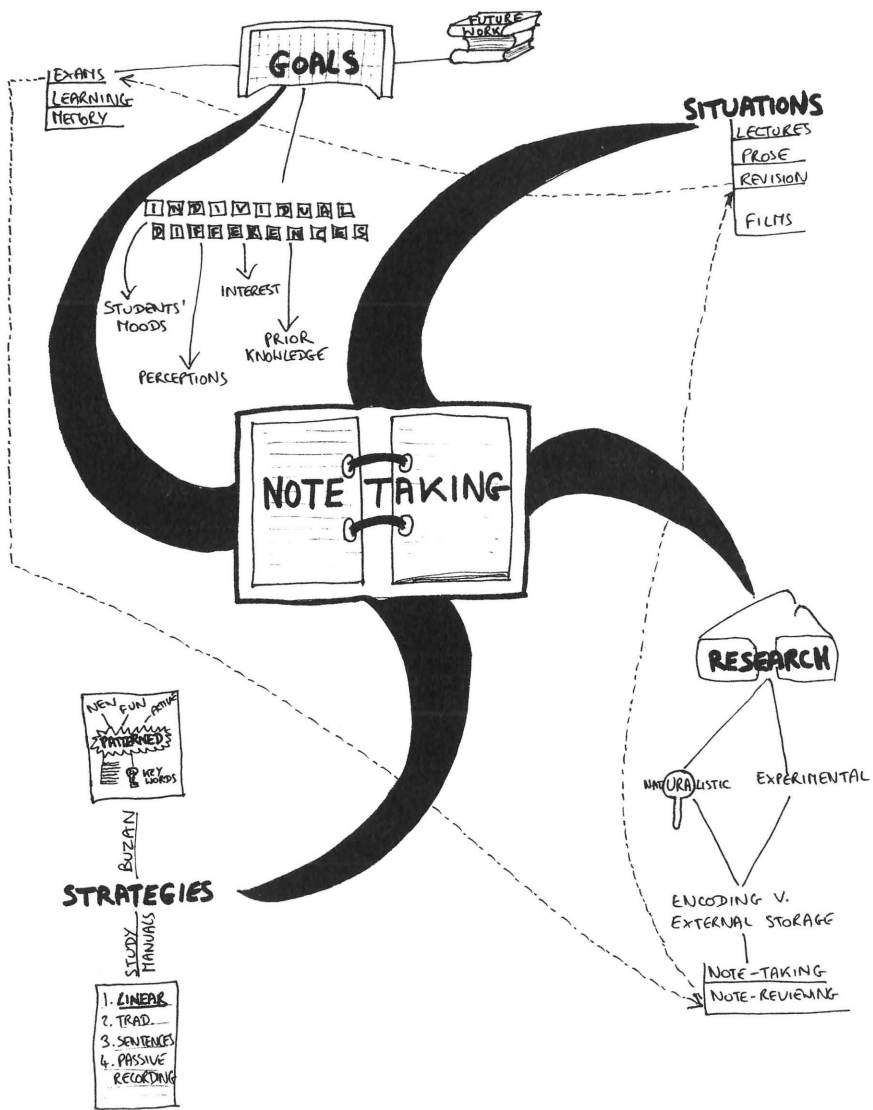


Figure 1.

Patterned note-taking illustration.

connections and inter-relationships all the time. Buzan argues that if we record information in a linear way, then we are operating contrary to the way in which the brain itself works. Such an argument has important implications for the recall of information and for note-taking. Since it has been shown that the majority of students take notes in order to review for examinations (Hartley and Davies, 1978), the question of how to aid recall from notes is of paramount importance. The advantage of patterned over linear note-taking for recall appears to depend on two factors: 1) the use of what Buzan terms 'key' words or phrases, and, 2) the active involvement of the student in transforming incoming information when taking patterned notes. These two factors will now be discussed in turn.

### **Key words**

Buzan devotes considerable space in his book to describe key words and to make a distinction between what he calls *key recall* and *key creative* words. A key recall word is described as 'one which funnels into itself a wide range of special images, and which when it is triggered, funnels back the same images' (p. 75). A key creative word, on the other hand, is far more general than the key recall word. Such words are 'especially evocative but do not bring back a specific image' (p. 76). In all further discussion in this paper, key words are taken to refer to Buzan's key recall words.

Since the role of key words is a vital component in patterned note-taking, actually being able to identify which words are key words and which are not becomes rather important. Buzan says they are usually nouns or verbs and that sometimes they are accompanied by adjectives or adverbs. As in most areas of educational research, however, there is no one definition, but broad general agreement with differing emphases. Russell (1979), for example, agrees that key words tend to be nouns or verbs but he goes further by saying that they are generally concrete rather than abstract. Russell sees key words as the most memorable and the words that carry the essential information of the sentence or paragraph.

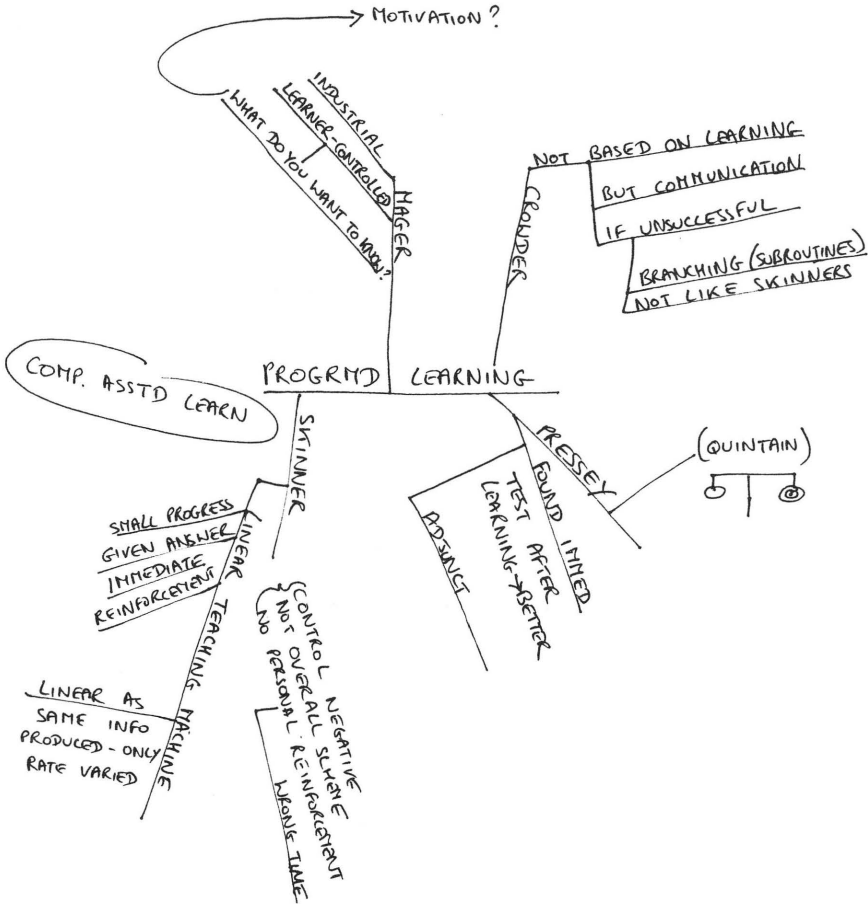
**Percentage of  
key words  
written in  
notes**

In an interesting comment on the percentage of key words written in notes, Russell says, 'When students are asked to take notes in whatever way they have found to be the most efficient and effective, it is usually found that only 5 to 10 percent of the words written are actually key words' (p. 174). As there is no evidence provided to support this observation, it must be assumed that this conclusion stems from Russell's own examination of students' notes.

In spite of the difficulty of identifying which are key words, this percentage would seem to be so low as to be doubtful. Figure 2 shows a comparison between the linear notes of one student and the patterned notes of another.

Both these students were undergraduate psychology students and they both attended the same lecture. There were 53 students at the lecture and of this number, only two took patterned notes, the rest took linear notes. The example of patterned notes shown in Figure 2 was chosen because it was a clearer example than the notes of the other patterned note-taker. The linear notes selected to make the comparison were chosen because they were closest to the patterned notes in terms of the total number of words written. Using these examples it was possible to look at the two types of note-taking and compare them on the number of key words that each contained. Figure 2 shows that although the percentage of key words was lower in the linear than in the patterned notes, it was still considerably higher than the figure quoted as usually occurring by Russell. Interestingly, though, the linear notes actually had a slightly higher *total* number of key words than the patterned notes. Thus it would seem that the more words a student writes, the more key words will be recorded, a finding contrary to the main idea of patterned note-taking where the aim is to record as much essential information in as few words as possible.

Hartley and Cameron's (1967) study bears some relation to the question of what percentage of key words are recorded in notes. In this study the percentage of 'information units' in the students' notes was compared with a lecturer's 'ideal' notes. The amount of agreement with the ideal notes ranged from 21 to 73 percent in different sections of the lecture. While accepting that 'information units' are not exactly the equivalent of key words or phrases, the fact that these units were similarly concerned with essential content would seem to lend support to the argument that Russell's estimates are



Total number of words:	68
Total number of key words	54
Percentage of key words to total words	79%

Figure 2.

A comparison between linear and patterned notes taken in a lecture on computer assisted instruction.  
 2a. An example of patterned notes.

1. Resey - 20's - machines. - people tested after learning → better retention.
2. Skinner - widespread, controversial views - can't give enough reinforcement  
Careful progression of info - sequences - to facilitate learning. Aimed at 95 on test.
3. Crowder - not based on learning. Questions → right → more info. Wrong - program failed. More flexibility than linear. Larger info - multi-choice. - Communication of learning Aimed at 85 on test.
4. Mager - learner shd decide control of instruction - student generated diff. controls/programs of learning. - concrete → theoretical rather than V.V.

Total number of words	86
Total number of key words	59
Percentage of key words to total words	69%

too low. Another study by Nye (1978) also compared the content of students' notes with the content of the lecturer's notes. Nye found an average of 32 main points in the student notes, as compared with 46 in the lecturer's notes.

### **Negatives as key words**

It must be concluded that Russell's low estimate of the number of key words noted by students results from an over-rigid definition of what a key word actually is. Such an approach, where the emphasis is on concrete nouns and verbs, holds certain dangers. Words such as 'no', 'not' and 'never' may be easily missed and yet they are obviously crucial as they change the whole sense of what is being written. If the reader thinks that it may seem unnecessarily fanciful that students would miss out negatives, Howe and Godfrey (1977) have shown that this actually does occur, and that it is not rare. In a lecture on psychology, the notes that the students took were later examined and it was found that out of twenty students, sixteen had reproduced a piece of negative information either incorrectly or had made notes that were ambiguous. Howe and Godfrey quoted what the lecturer actually said: 'that the infant seems to be like some sort of ball of clay, infinitely malleable, and the parents can then mould the baby into whatever type of person they wish. Of course, it isn't like that . . .' (p. 79). They go on to reproduce the students' versions from which the following three excerpts are taken:

'The infant at birth is "malleable", the parents can mould the baby into shape that they wish.'

'The infant is like a ball of clay—hence parents can . . .'

'Mould like a ball of clay as parents discipline child'  
(pp. 79–81).

Making notes that are ambiguous has serious consequences for patterned note-takers as they are trying to record a lot of information in a few words. It would be of value, therefore, to carry out a naturalistic study comparing the notes of patterned with linear note-takers after a lecture in order to see whether or not either technique produced a greater proportion of incorrect or ambiguous information.

### **Do key words aid recall?**

There has been some research on the effectiveness of using key words in aiding recall. Howe, Ormond and Singer (1974) carried out an experiment designed to determine the effects of different recording activities when listening to a

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prose passage. Undergraduate students were allocated to one of four experimental conditions: 1) write down the entire passage as in dictation, 2) write only key words, 3) write only words containing the letter 's', and, 4) write nothing. Test scores obtained before and after the experimental treatments were compared and it was found that there was a statistically significant improvement in conditions 1 and 2 combined, compared with conditions 3 and 4, also combined. It is important to note, however, that there was no significant difference between recording key words (condition 2) and recording the whole of the passage (condition 1).

Howe and Godfrey (1977) designed an experiment to find out what the effect would be of asking students to write down the three words that they considered were important from each sentence of a prose passage, compared with writing down the whole of each sentence. In two separate experiments with 14 and 16 year old pupils, no significant differences were found between the pupils who wrote down three important words and pupils who wrote down everything. This result confirms the findings of Howe, Ormond and Singer. It was found, however, that pupils who scored the highest on the test recorded a significantly greater number of words considered pertinent to the test questions, than had the low test scorers. This finding suggests that it is the actual words selected which is the important factor in aiding recall, and not that the number of words to be noted should be limited.

Since the above investigation did not include a review period, Howe and Godfrey carried out a further experiment with undergraduates acting as subjects and incorporating a review period. This led to the finding that those students who noted three important words from each paragraph (as opposed to each sentence), had significantly higher test scores after review than the students who were instructed to read, copy or write down the first three words of each paragraph.

There does seem to be a limited amount of evidence then, that using key words may have a beneficial effect on recall, especially if the words chosen for recording are genuinely *key* words. Such a reservation presupposes a high level of ability in the students who are taking notes and may explain why in three of the four experiments described, writing

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down all the information presented was as effective as selecting just three important words. This consideration leads to the wider question of whether patterned note-taking might only be suitable for those students who are capable of identifying which words are the important ones and for those who can do it at speed—a necessary requirement in a live lecture. There has not yet been sufficient research to indicate what particular abilities a patterned note-taker needs, but the evidence so far suggests that an ability to identify key words would be one of them.

### **Active note-taking**

Considerably more attention has been paid to the importance of the active element in taking notes. The question of whether the process of taking notes is of itself actually of value for later recall has revolved around the central dilemma of whether students take notes to have a concrete record of the information presented to them or whether they believe that the actual act of taking notes somehow helps in the learning process. It is the latter position that Buzan stresses as important. He argues that by making patterned notes, the student is actively involved in imposing his own organisation on the incoming information. Buzan claims that the linear note-taker, on the other hand, is merely acting as a passive recorder of information.

This dichotomy has been given different names by different researchers, but perhaps the most widely used is Di Vesta and Gray's (1972) 'encoding' versus 'external storage' terminology. These investigators hypothesise that the encoding function is more important in aiding the learning process, for it involves the student in transforming and categorising the information being received. Not all researchers agree. Carter and Van Matre (1975), for example, argue that it is *having* the notes that is important rather than the taking of them. The implication here is that the external storage function is more important.

### **Does active note-taking aid recall?**

Over twenty studies have investigated the encoding versus the external storage hypothesis. These studies have used a variety of strategies such as comparing conditions of note-taking versus no note-taking, review versus no review, and, studying one's own notes versus studying lecture handouts. Bearing in mind, therefore, that the aims and

methods of these experiments have sometimes been quite different, the experimental findings have been summarized in Table I.

This table lists those studies that have found that encoding leads to better recall, those that have found that external storage does so and those that have been unable to show any significant advantage for either note-taking function. From this summary it can be seen that there are slightly more studies suggesting that encoding may be the more important function. Nevertheless, quite a number of the studies have reached the opposite conclusion.

### **Table I**

Summary of research on the encoding versus the external storage hypothesis in note-taking.

Studies indicating encoding as the more efficient function (Total, 12):

Howe, 1970b.

Di Vesta & Gray, 1972.

Di Vesta & Gray, 1973 (two studies).

Baker et al, 1974 (one study).

Howe, Ormond & Singer, 1974.

Annis & Davis, 1975.

Peper & Mayer, 1977 (three studies).

Powers & Powers, 1979.

Weiland & Kingsbury, 1979.

Studies indicating external storage as the more efficient function (Total, 7):

Fisher & Harris, 1973.

Baker et al, 1974 (one study).

Hartley & Marshall, 1974.

Carter & Van Matre, 1975.

Collingswood & Hughes, 1978.

Rickards & Friedman, 1978.

Howe, 1978a.

Studies indicating that neither function is the more efficient (Total, 3):

Fisher & Harris, 1974a.

Fisher & Harris, 1974b.

Thomas, 1978.

The evidence then suggests no clear advantage for either function of note-taking. Although it is true that more studies did find encoding to be advantageous, the fact that the evidence was not more clear cut, leads to the interesting question of whether note-taking does actually help the encoding process, or whether, as Baker *et al.* (1974) 'Actively taking notes may particularly interfere with effective cognitive encoding.' (p. 1).

The argument is not whether encoding information aids recall—a generally accepted hypothesis—but whether note-taking aids encoding. If it does not, then Buzan's claim that being actively involved in taking notes should help students achieve greater understanding and lead to better recall, may only be true in any situation where time is not at a premium. In a live lecture, however, students have no control over the rate at which the information is being presented and so taking notes may interfere with encoding that information.

Many of the researchers involved in these studies stressed that note-taking serves *both* an encoding and an external storage function and it can be very difficult to isolate the two as separate elements. Buzan himself implicitly acknowledges the external storage function when he advises the necessity of having up to four review sessions. Russell, on the other hand, claims that making patterned notes or 'mind maps', as he calls them, is so effective for recall that often it is not necessary to go back to the notes at all. This would seem to be dangerous advice. However, if the normal procedure is to review one's notes, be they patterned or linear, a disadvantage might arise with the patterned notes because of the scant amount of information actually on the page. Maddox and Hoole (1975) argue that as students do not generally bother to look at their notes again for some considerable time, there is a danger that: 'over-simplification is very likely to occur when notes are taken in too sketchy a fashion' (p. 28). It is presumably of little benefit being able to review one's notes if those notes do not contain enough information. Hartley and Marshall (1974) found that 'good' note-takers, in contrast to 'poor' note-takers, showed much greater improvement on a test following a review period. The 'quality' of the notes was measured by 1) the number of words written, and, 2) the amount of information recorded which was considered necessary to enable the students to answer test questions correctly.

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**Comparing  
patterned  
with linear notes**

At the time of writing there is no research known to the author which compares the recall of patterned note-takers with that of linear note-takers. The closest that research has come to examining the effectiveness of patterned note-taking in recall has been a study by Dansereau *et al.* (1979). This experiment involved training students in one of three study strategies, as part of a larger study skills course and then finding out which of the three was most effective. The three strategies were paraphrase/imagery, 'networking' (i.e. producing two-dimensional maps) and analysis of key ideas. There was also one no-treatment condition. Comparisons were made on the basis of test scores obtained from textbook material. Tests were given before, during and after the training course, which was also concerned with building up the right mental attitude to study and which lasted for a period of fifteen weeks. Dansereau and his colleagues found that although there were no significant differences between the test scores for each strategy, all outscored the control group, with the 'networking' group showing the biggest improvement.

Dansereau and his colleagues then carried out a further experiment specifically to investigate networking. The new study involved training students in networking for approximately five and a half hours. Their performance on a test on a prose passage was then compared with that of a no-treatment control group. Both groups were allowed three minutes to review the notes they had made when studying the material. This experiment led to the interesting finding that the networking group performed significantly better on main ideas but *not on details*. This would seem to support the warning given by Maddox and Hoole about the danger of not taking sufficiently detailed notes.

Dansereau's study does provide some evidence of the effectiveness of networking which appears to be similar to patterned note-taking. It refers, however, to learning from prose material rather than from a live lecture and there is no direct comparison with students who take conventional linear notes. The no-treatment control group may well have taken linear notes, but this is not specified, so it may be that they took no notes at all. A further drawback to this study is that only a few hours training were given to the students. This may have meant that they did not feel entirely comfortable with, and accustomed to, their new study strategy. A comparison between students who habitually take notes in a

patterned or linear form would perhaps reveal greater differences, since both groups would be thoroughly familiar with their own particular technique.

### **Summary of the empirical research**

To recapitulate briefly. Research on key words provides some evidence to support the notion that using key words in notes helps retention. Selecting the pertinent key words may, however, be a crucial factor in recall. Research has also provided some support for Buzan's claim that actively transforming incoming information is effective in helping the learning process. However, since several studies found that the major advantage in note-taking was in having a set of notes to review, there is some doubt about whether taking notes actually helps or hinders the encoding process. There has been no research directly comparing patterned with linear notes, but studies have shown that networking, a similar technique to patterning, appears to aid recall from a prose passage.

### **Criticisms of patterned note-taking**

The critics of Buzan's approach include both students and lecturers as well as educational researchers. Student express considerable reluctance to try such a radically different method, particularly when they feel their main concern is to record as much information as possible. Such students feel worried that by creating patterns in a lecture they will not have time to record essentials, especially if they have to stop and think how to fit in each piece of information into their pattern. Lecturers express the view that not all lectures are structured to reveal the central concept at the beginning of the lecture (some, they say, are not structured at all!) In lectures where the structure is a step-by-step argument, for example, it is difficult to identify the central concept so that it can be placed in the middle of the page as a starting point. Gibbs (1980) says that in such a situation patterned notes are a 'chaotic mess'. He argues that Buzan's technique is best suited to making notes from textbooks or to being used as a recall device when revising from conventional notes.

### **Distorting the technique**

It could be argued that these criticisms and doubts reflect a lack of familiarity with what Buzan actually recommends. It is a sad fact that many techniques which become popular suffer from being passed from person to person, without reference to the original source material. Inevitably, this

leads to at best a dilution and at worst a distortion of the actual method. In his book, Buzan makes it clear that the student should have two pages of notes in a lecture, so that the left hand side can be used for patterns and the right for information that has to be recorded linearly, such as quotes, formulae, references and so on. Most importantly, Buzan recommends that the final pattern should be made *after* each lecture. This, he claims, should only take about ten minutes and, in making such a final pattern, the student is also carrying out his first review. Following such a practice would reduce in force many of the objections to patterned note-taking and yet this advice is rarely passed from one student to another when describing the technique. With regards to the 'chaotic mess' criticism, Buzan argues that notes which look neat and ordered are messy in informational terms. It is the content and not the appearance of the notes which is important.

### **Learning patterned note-taking**

When learning any new technique it would seem essential that the learner go to the original source. Merely hearing about it from other students or study advisors, or reading other peoples' interpretations of it, is not sufficient. Helweg-Larsen (1979) is a study advisor who stresses the importance of teaching students how to take patterned notes, otherwise, he argues, they tend not to bother or they produce hybrid versions. Helweg-Larsen describes a course of study skills which actually involves students first copying an example of patterned notes as an introductory exercise. This is followed by the students being asked to make their own patterned notes over the next few days, coupled with discussions of the technique. Since creating patterns involves active participation as well as creative thought, it is not surprising that acquiring the technique takes a considerable amount of time, effort and practice.

Even if a student is prepared to invest the necessary time and effort, there is still the possibility that patterned note-taking might not suit that individual student's needs and abilities. Dansereau *et al.* (1979) discuss the particular abilities required for networking. They conclude that in transforming prose into two dimensional maps, a general reading comprehension ability is needed, and also that there may be a type of comprehension skill required which is different from vocabulary level and prior knowledge. Hanf. (1971) says that making maps involves critical thinking and

'demands the student's insightful judgements and discriminate decisions about the material' (p. 225). Both these researchers are discussing abilities which are required when taking notes from written material. The problems which arise when taking notes in the 'here and now' situation of a lecture obviously require further exploration, but some of the abilities needed may be similar.

Because different techniques and different subject matters require different sets of skills, more and more study advisors are now recognizing that there is no single correct method for any studying activity. Some study manuals, too, are beginning to follow this line (e.g. Gibbs, 1977), but unfortunately, there are still too many of them taking a didactic approach and claiming that one particular study strategy will lead to greater academic success. Buzan himself makes such a claim even though, as has been the theme of this paper, there is no real evidence to suggest that his method is more effective than any other.

## **Conclusions**

Finally it should be stressed that there is a need for more research concerning the beneficial effects, if any, of Buzan's patterned note-taking strategy. Experiments need to be carried out in lecture situations as well as in learning from textbooks. Naturalistic studies, where students are unaware that their notes will later be examined, need to be undertaken to compare the notes of patterned with those of linear note-takers. Such studies would be useful in determining what differences occur naturally in the notes and where the two methods have advantages and disadvantages.

Buzan published his study manual in 1974. Enough time has elapsed now to establish that the technique is not a 'flash in the pan', but is a radical attempt to change the way in which students take notes. Buzan is one of the few study advisors who presents a specific system designed for note-taking, and, as such, it deserves more attention from educational researchers. Students, however, should be cautious about following a single study strategy. This is particularly so in this case where there is so little scientific evidence to demonstrate that patterned note-taking is more effective in helping learning, than other more conventional methods of note-taking.

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