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ABSTRACT

Very little is known about how students learn from television, particularly when television is used in conjunction with a prescribed set of written materials. At the Open University of Great Britain, classes have proliferated to the extent that it is not longer possible to broadcast one lecture to accompany each unit of instruction. To reduce air time broadcasts are sometimes restricted only to the presentation of partial agruments or to evidential material. Broadcast designers must clarify the distinction between learning objectives and teaching methods so that students clearly understand the relationship of the broadcasts to the written text and the course assignments. (EMH)

PROBLEMS OF LEARNING FROM TELEVISION AT A DISTANCE

- A.W. Bates -

Introduction

Very little is known about how students learn from television, particularly when television is used in a planned way with other media, such as correspondence texts. Open University teaching materials are meant to be integrated - in other words, there is supposed to be some relationship between material covered in the broadcasts, the correspondence texts, the set books, and the readers, etc. In many of the Mathematics, Science, and Technology courses, this relationship is "time-based." In other words, a television programme is related to a particular correspondence text, and is transmitted about the same time that the student is meant to be reading the text.

However, because of the number of courses being offered by the University, it is becoming increasingly difficult to allocate one programme per unit, partly because of cost and production factors, but mainly because of the difficulty of finding enough suitable transmission times. (We are already having to broadcast some programmes at 6.40 in the morning). This means that not every unit can now be directly supported by a television programme on a number of Mathematics, Science and Technology courses. Also there has been a growing realisation that when there is a variety of media available, television can be used to concentrate on those functions which it can do best. In other words, the programme does not have

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to be a self-contained unit in its own right, but need carry only a part of the teaching load. It also means that television can play a rather different role from the correspondence text, and so the situation has occasionally arisen in a number of Technology courses where an individual broadcast has deliberately not been tied to just one specific unit, but may carry relevance for a number of the units throughout the course. In some cases, this has gone to the extent of individual programmes being linked by a theme running parallel to the correspondence texts.

This increasing sophistication of course design however presents our students - many of whom have previously experienced only the most traditional teaching methods - with a number of problems. We are at present carrying out research at the Open University into the identification of these problems, to discover their nature and extent, and possible solutions. This research is being carried out on programmes and units in all faculties, but in this paper we will concentrate on programmes in the Mathematics, Science and Technology areas.

Identifying the functions of television programmes

A basic problem for our students working on their own at home is: "How can I identify and relate the objectives of the broadcasts to the objectives of the unit or course?" Here we should stop and consider what we mean when we talk of programme "objectives". In a multi-media teaching situation, learning objectives - for instance, "to calculate the temperature measured by a metallic resistance thermometer or a thermistor, given the resistance and necessary characteristics in either case" - are usually common to all the different media. The way in which these objectives are achieved however will differ, depending to a large extent on the mix of media available. (There has been a lot of fruitless media research trying to match particular media to particular kinds of concepts or content). Objectives of the individual media are much more determined by the style of teaching required than the actual content. A medium such as television can generally be used more effectively

to manipulate ways of learning (through increasing motivation, analysing, observing, applying principles to actual situations, etc.) than to teach specific concepts. True, most concepts lend themselves more easily to being understood through particular styles of teaching (for instance, experimental method lends itself to being taught through practical laboratory work). However, alternative methods of teaching, using resources which happen to be available, may be just as effective. Television therefore appears to be more appropriate as a teaching medium in relationship to methods of teaching, although there will be some content areas which also indirectly lend themselves to television instruction, through the teaching methods usually associated with these content areas being particularly suitable for presentation by television.

Therefore, "objectives" for a programme may refer to two related but different ideas: the learning objectives, in terms of content and skills mastered by the student (which may be common to other media), and the teaching methods by which these learning objectives may be achieved. For this reason, we prefer to use the word "function" to describe the intentions of a television programme, embracing both learning objectives and the method of teaching.

This distinction is important, because, we shall argue, it is necessary to communicate clearly the function of the broadcasts to students, if they are to make the most of them. This communication of function between teacher and student is not so easy, partly because this communication must be carried out at a distance, and partly because, as we have seen, there is often confusion even in the minds of course designers as to what the functions of the broadcasts actually are.

The Function of Broadcasts at the Open University

What then are the functions of these broadcasts?

Broadcasts can have a variety of functions. Many students initially expect our broadcasts to be lectures (indeed, this may

well be a problem of wider generality than broadcasting) and many of our programmes are just this, i.e. carefully constructed arguments, using specially designed graphics, selected film material, laboratory experiments, or specially recorded discussions or interviews, as evidence. However, in many cases, the illustrative material has been expanded to such a degree that only a part of the argument is presented in the programme itself. Indeed there are instances where programmes are all 'evidence', with the argument being set out in the correspondence text or broadcast notes, or even left to the student to complete himself. Therefore it is crucial that the student can accurately discern whether he is being presented with a 'complete' argument, or with certain kinds of evidence which fit into an argument expounded elsewhere in the material.

Most of the functions of television in the Open University can be classified in terms of providing evidence for arguments, or as explaining, clarifying or illustrating material in the correspondence texts. Programmes can also be used to provoke an emotional response in students, or to try and change their attitudes. It may be sufficient in some instances for students merely to react to a programme and the relevance or effect of this experience will become apparent some time later. It is important, however, that students accurately recognize the purpose of a programme and approach it in the most appropriate way.

A student has to exercise considerable judgement in discerning how he is supposed to react when evidence is presented in broadcasts. He has to ask himself questions about the nature of the evidence. Is the programme deliberately trying to create accurate examples, models or demonstrations which the student is expected to accept as evidence for or against an argument? Or are the examples, models, demonstrations, etc. themselves a matter for critical examination? For example, in many science programmes students are shown equipment or experiments which they have to take on trust. It is the way the experiment is set up, the results and the interpretation of

results, which are important. There is rarely any question (on the academic side at least) that the results would not be repeatable under similar circumstances, or that those responsible might have deliberately cheated to obtain those results. In some arts, educational studies, social sciences and technology programmes the evidence presented to the student, the method of collection and the role of the producer and academic in the selection of material, are all legitimate areas of concern for the student in assessing the validity of the material. It is important therefore - particularly when a change in the usual format of programmes takes place or when students are taking a combination of courses across faculties - that students are clearly aware of how material presented in broadcasts should be used. One can therefore foresee difficulties with science and technology programmes which attempt to put science and technology in its social context. For instance, information about the industrial process of manufacturing aluminium is qualitatively different from information about the social and ecological consequences of building an aluminium smelter in an isolated part of Anglesey, yet both kinds of information appear in the same programme. We also anticipate particular problems when students are confronted with evidence in a selective but unstructured way, which they have to analyse themselves, especially if they are unprepared for this kind of format.

The issue of taking things on trust is a crucial one in broadcasting. Time, particularly in television, is precious. Thus, in mathematics programmes for instance, during a transmission students are often expected to follow the general line of the argument, rather than satisfy themselves of every detail in the argument. Carrying out calculations or manipulating formulae at each stage holds up the flow of the argument and can be done afterwards. But deciding when to accept and pass on, and when to stop and criticize or analyse, is often extremely difficult. Students have to learn to pick up cues,

either from the broadcast notes, from general introductions to courses, or from the programme themselves, as to how they should approach 'evidence' in a suitably critical manner.

Research and Evaluation

This analysis of the nature and function of broadcasts allows us to test assumptions about the way students will react to broadcasts, and about possible ways of improving their value. We are testing the following assumptions:

(a) the more a programme format departs from a direct lecture, the more difficulties a student will encounter in knowing how to use the broadcast material.

(b) that students require more help in identifying the function of broadcasts and how to use them in their studies than is currently accepted in course production.

(c) that the majority of broadcasts made so far do not make full use of the potential of broadcasting in the Open University situation.

(d) that difficulties caused by awkward transmission times, late mailings of related printed material and overloading of work impede the use students can make of broadcasts.

The presentation at the conference will look at some of the preliminary evidence collected from Mathematics, Technology and Science television programmes which will test the validity of these assumptions, and some suggested means of overcoming these difficulties.