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ABSTRACT

The Open University of Great Britain is an open-enrollment, home-based institution in which the majority of the instruction is conducted via broadcasts and correspondence. There are over 50,000 students enrolled in nearly 100 courses which require the transmission of 1,000 television and 1,000 radio broadcasts each year. Recently, research has been conducted to: 1) determine which programs are most successful; 2) provide information for research allocation decisions; and 3) determine which combination of resources produces the most effective multimedia presentation. A 1974 postal survey of 1,200 students examined specific programs and attempted to measure the level at which educational objectives were met, the cost and the convenience of the broadcast strategy, and the effectiveness of the media mix. Such studies have resulted in alterations of the courses considered and have illustrated the value of research to decision-making in educational broadcasting. (EMH)

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THE BRITISH OPEN UNIVERSITY:

DECISION-ORIENTED RESEARCH

IN

BROADCASTING

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Presented at the National Association of Educational Broadcasters convention,
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Introduction

Anyone talking about any aspect of Britain's Open University always faces the same problem: how can you describe it briefly? I could spend the whole time available telling you how it works, and even then there'd be lots of important things not properly explained. All I'll try and do, then, is to give you the minimum you need to know to follow what I have to say about research into broadcasting at the Open University, and leave the rest to questions afterwards.[1]

The University was first publicly suggested by Harold Wilson, our present Prime Minister. It was created to give a chance of higher education to all those adults in Britain who for various reasons were unable to go to University after leaving school. Course design began in 1969, the first students enrolled in 1970, and the first courses began in 1971. There are now over 50,000 students enrolled, and nearly 100 different courses on offer. Already nearly 10,000 students have graduated. Students, most of whom are working, study primarily at home, through specially written correspondence texts, standard set books, and specially made television and radio programmes. There is an element of face-to-face tuition at local study centres, but this is sporadic and optional, although all students have to spend at least one week in residence at a summer school on a conventional university campus. The students' main source of personal tuition is through correspondence tutors. Students get a degree by accumulating credits, six for a general degree, and eight for honours. A credit is roughly the equivalent of 10-12 hours studying a week, for 32 weeks. The academic year runs from January to November. Students are continually assessed, needing to successfully complete at least six tutor-marked assignments per year. They must also sit an end of course examination under supervision. The courses are designed by teams of academics, (who are employed full-time by the University), BBC producers, educational technologists, full-time regional staff and a back-up team of graphics artists, editors, photographers, librarians, etc. The course team decides the policy for the use of television and radio on a course, and an individual programme is the joint responsibility of an academic and a producer.

The broadcasts are made for the University by the BBC, which also provides over 30 hours a week transmission time on a national television network, (BBC 2), and up to 30 hours a week on a national VHF radio network. The University pays the BBC, from money given to it for this purpose by the government, the full cost of producing and transmitting its programmes. The BBC has created, as one of its five educational broadcasting departments, a special Open University production unit, based on a studio complex at Alexandra Palace, in North London, 50 miles from the OU campus at Milton Keynes.

The total OU budget for 1975 was £30 million, of which £6 million, or 20%, was spent on broadcasting. Each year, the BBC has produced almost 300 television programmes and 300 radio programmes for the OU. Since courses last at least four years, there are now almost 1,000 television and 1,000 radio programmes transmitted each year for the OU. Each TV programme lasts 25 minutes, and each radio programme 20 minutes, and so far each transmission is repeated later within the same week.

1. For a good brief description of the OU system, see: "What is the Open University?" (available from OU Consultancy Service, OU, Walton Hall, Milton Keynes, England).

Programmes are broadcast early in the morning, early in the evening and at weekends.

Studio facilities, building rentals, services, salaries, overheads, etc., account for about 80% of the money paid to the BBC. The remaining 20% is "spending" money for programmes for such expendable items as film shooting, processing and editing, sets, graphics, and fees for talent, although most programmes are presented by OU academics, who are "free". An average programme budget then would be about £2,000 - £3,000 for "spending", although this can be increased if necessary so long as the total budget for a course is not exceeded. Time spent on preparing programmes varies, but an average television programme might take about six weeks preparation after the programme ideas have been agreed. Usually, one full studio day is allocated for each studio-based programme, which is standard BBC practice for educational broadcasts.

From out of these details, there are certain general aspects of the Open University which must be understood, before research can be discussed.

First of all. Broadcasting provides a student with no more than 25 minutes television and 20 minutes radio material as a maximum out of 10 hours a week study.

Secondly. Nevertheless, a very large number of programmes are produced and broadcast each year.

Thirdly. Programmes are produced to a high technical standard, making extensive use of film, graphics, and subject experts. We have sent film crews all over the world, and have specially interviewed Presidents (like Nyerere), Prime Ministers, Cabinet ministers, industrial leaders, and other prestigious figures for our programmes.

Fourthly. Programmes are meant to be closely integrated with the other components of the teaching system, particularly the correspondence texts.

Fifthly. Students study primarily at home.

This, in a nutshell, is the general framework in which our research is set.

Setting-up the research

Now I'd like to go back to the early days, and discuss briefly how the research got set up. First of all, it was always intended - even in the early planning of the University - that research should be carried out into our own teaching system. Partly for this reason, and partly to provide educational advice to course teams, the University set up in 1970 an Institute of Educational Technology. Now educational technologists had been very influential in the early design of the Open University teaching system and the courses, and they had a basic model for course design, which went something like this:

STRUCTURE COURSE
DEFINE UNIT OBJECTIVES
SELECT APPROPRIATE MEDIA
PREPARE MATERIALS
ASSESS STUDENTS
EVALUATE COURSE

Unfortunately, when they came to look at each of these in detail, one cupboard in particular was bare - the box: choice of media. There was very little in the research currently available that seemed relevant to the OU situation.

At the same time, the BBC producers were anxious for feedback. Unlike their colleagues elsewhere in the BBC, OU producers' programmes were directed at much smaller numbers - too small to be measured by the audience research department of the BBC, who, with their limited budget had much bigger fish to fry.

Consequently, it was not surprising that IET used one of its posts for a lectureship in media research methods, and I was transferred to this towards the end of 1971.

Levels of research

I reckoned that the University needed research into broadcasting at three levels:

First: at a programme level: what kinds of programmes are successful; what difficulties do students encounter in learning from television and radio; how do students use the broadcasts?

Second: at a management level: how should broadcast resources be allocated across different course teams; what should be the overall role of broadcasting at the Open University; how much transmission time will be needed, and at what times should we transmit?

Third: at what I call a structural level: how should broadcasting be organised in a multi-media system; what advice can we give other institutions about whether to use broadcasting or not and the way it should be organised? and what have we learned ourselves about this, and its implications for the OU?

Let's look at what we have been able to do so far at each of these levels.

Programme research

From the first teaching year (1971) we had a system by which students could report on courses. This was developed by my colleague, Naomi McIntosh.[1] The system was very similar to that used at Purdue University, called I believe the "cafeteria" system,

1. McINTOSH, N. (1972). "Research for a new institution - the Open University," in FLOOD-PAGE, C. and GREENAWAY, H. (eds.), Innovation in higher education, London: Society for Research in Higher Education.

except that in the early days our reporting system was standard for all courses, and pre-coded. This information was useful as far as it went, and indeed has been modified in the light of experience - there are open-ended questions as well now - but as with all continuous reporting systems, there are problems with low response rates, particularly towards the end of a course. For a number of reasons, producers also wanted more detailed information about their programmes. I developed also a tutor reporting system, which suffered from all the difficulties of the student reporting system, with the added disadvantage that tutors were more interested in the assessment and tutorial aspects, and were generally not very interested or penetrating in their comments on broadcasting.[1] Furthermore, by 1974, we were offering nearly 60 courses, and we just did not have resources to cover all courses with regular feedback. Regular reporting then was useful up to a point, but something more was required. In particular, it was difficult for production staff to see how they could use this standardised information when they had to make decisions about their future programmes, although it did sometimes help decide on which programmes should be remade.

Gradually, towards the end of 1973, I came to the conclusion that we must carry out some in-depth studies of individual programmes. But I didn't want to get in the trap of carrying out classical experimental studies, based on pre-determined hypotheses about the role and function of broadcasting, because I just couldn't see this kind of research providing results which at least in the short-term would give producers the kind of information they needed. In any case, we were in a situation where television and radio were only two components in a highly complex teaching situation, and we really didn't feel equipped to make too many guesses about what variables would be important. We found ourselves in fact facing a number of problems. No matter how we designed the studies, we could carry out only a limited number - we guessed, with two researchers, that we could carry out about 20 in the first year. Even this figure turned out to be wildly optimistic, and would in any case have been only a drop in the ocean of 2,000 TV and radio programmes. Another problem we faced was that although programmes lasted at least four years, there was a very limited budget for remaking them during the life of the course. Only a couple of broadcasts per course could be remade, and the decision to remake would often have nothing to do with feedback, or even with the quality of the programme. For instance, programmes would have to be remade because they had become out of date. Sometimes the correspondence text to which a programme is linked is radically changed, and then the programme too has to be remade. Nor have we been able to get into a Sesame St. situation of pre-testing programme material. The BBC method of production, the high strike rate of 300 programmes per year from one studio, and the tiny number of researchers - there are just two of us - did not permit controlled experimentation with programmes during the production process.

This raises a basic question about programme research: what's the point of doing it if you can't change the programmes? There are two reasons. The first is that we are in an on-going production process. Although by the time the research is reported producers and academics have moved on to new programmes, they haven't usually disappeared from the Open University. Secondly, although every programme is a unique creation, nevertheless there is likely to be a number of underlying principles which determines the

1. BATES, A.W. (1974). The role of the tutor in evaluating distance teaching, Teaching at a Distance, Vol. 1, No. 1.

educational framework of a programme, which once learned can be carried over into new situations. Our task then was to design a system of programme evaluation which would not necessarily tell producers or academics what to do in any specific situation - that's impossible, because every new situation is different and unpredictable - but which would provide them with a relevant learning experience, so when they are faced with a new situation, they can draw on past experience of what happened at the student end, as well as at the production end, when a certain course of action was taken.

How do we do this, and how successful have we been? In 1974, my colleague Margaret Gallagher and I carried out 18 different studies of individual programmes or groups of programmes, and the BBC seconded a producer to us, Jack Koumi, to carry out a further six this year. With minor variations, the techniques we used were similar on each study. We had three criteria in mind in judging a programme, which helped in determining what data to collect and how to interpret it:

First: was the broadcast made with a clear educational intent, in the sense of providing the student with knowledge or experience relevant to the course he or she was following? Could the students correctly identify this purpose? Did the programme achieve these objectives?

Second: did the broadcast provide students with knowledge or experience which it would be difficult to provide as cheaply conveniently in any other way in the Open University situation?

Third: was the intended relationship between broadcast and text achieved, and were students able to integrate the broadcasts with the rest of their studies?

I'll not go into why we deliberately rejected many of the standard evaluative methods, such as experimental design, and performance testing,[1] but on the basis of experience gained earlier, the method we evolved was as follows:

First, we invited each of the six senior producers to suggest two to three programmes which they thought were examples of either typical or potential uses of broadcasting within their area. We then viewed or listened to the programmes, skim-read the correspondence text and related printed materials, then discussed each programme with the relevant producer and the academic. This discussion was deliberately unstructured, as we were trying to define the underlying intention behind the programme. Sometimes of course this had been specifically stated, but often it was implicit. We also endeavoured to find out what the producer and academic themselves would like to know about student reactions. We then drafted a questionnaire, which was amended or approved by the producer and academic. Each questionnaire was specifically designed for each study. Through the University's Data Processing department, for each study we drew a random sample of 200-250 students, plus a further random sample of 50 students with telephones. 200 students usually gave us at least a 25% sample size, sometimes much more. The questionnaires varied from study to study, but a feature of all the questionnaires was the combination of pre-coded and open-ended questions. Students were asked, for instance, not only to rate the programme on a fixed scale of usefulness,

1. BATES, A.W. (1975). Obstacles to the effective use of communications media in a learning system, in JAMIESON, G. and BAGGALEY, J. (eds.), Aspects of Educational Technology VIII, London: Pitmans.

but also to give reasons for their answer. The questionnaires were posted to arrive within five days of the second transmission of a programme. A reminder was sent within 10 days, and a second reminder within another 10 days. These reminders boosted response rates considerably, most averaging over 70% - a crucial factor for reliable evidence on student reaction.

On some studies, the postal questionnaires were backed up by about 50 telephone interviews. The telephone interviews proved useful as a general cross-check with questionnaire information, and sometimes provided revealing insights into the environments in which our students are working.

Again on some studies, group discussions were arranged, when the programme would be shown on video-tape to a group of students. The discussion would deliberately be loosely structured - the first question being: "What did you think of the programme?" We'd normally have a range of questions ready, but in most cases, we wouldn't have to ask them, since they tended to be spontaneously covered in the discussion. The aim of these discussions was to open up ideas about the programme that we ourselves hadn't been able to anticipate. The discussions were sound-recorded and transcribed.

Finally, we also made use of any other feedback information available, such as regular student and tutor reporting.

Each of these methods of data collection has its weaknesses, but used in conjunction, they provide a clear picture of students' reactions to the programmes. We did not computerise or code the data, but typed up the open-ended comments, manually counted the quantitative data, and analysed the questionnaires as a whole, rather than question by question. Using this method of analysis, we produced a draft report, and a set of appendices with all the data. The draft report contained a set of conclusions and recommendations. We discussed the draft report individually with the producer and academic, raising also any personal points (e.g. lack of clarity in speech by the academic) which did not have any wider implications and which therefore didn't need to be included in any written report. A full copy of the report was then sent to the course team members, and a three to four page summary distributed to all producers, educational technologists, and faculty members. Sometimes we followed up the report with a discussion of the results with the course team.

What have we found out? And what effect has this had on programmes? Let me take two examples. The first study we did was of a maths. course. This was done as a result of a direct request from the course team. The course was being designed for first presentation in 1974, as a half-course. The second half-course was to be presented in 1975, so they wanted to learn about whether their broadcast policy for the first course was more or less right, and could be repeated the following year. There were several questions we attempted to answer, but the most important finding was about pacing. A strong argument for the use of TV or radio in education is its "pacing" effect - that of keeping students studying at a distance "on schedule".

I can do no better than quote from the summary of my colleague, Margaret Gallagher.[1]

> " ... Tutor-Marked Assignment cut-off dates [deadlines] are the best guide as to when the vast majority of students will have studied a particular unit.

1. GALLAGHER, M. (1975). Broadcast Evaluation Report No. 1: M231 Analysis: Milton Keynes, Open University.

> Students appear to work neither to the schedule of course calendar start dates, nor to the TV schedule. There is also an indication that students may "have a rest" after submitting an assignment."

This is a crucial finding for multi-media courses, supported in subsequent studies. If students work at an uneven pace over the year, as they seem to do, or even worse get behind on a course, programmes which are directly linked to specific units will not be very helpful, since the students are likely to be several units behind schedule when the broadcast is transmitted. This is a particular problem on courses where students depend on a step-by-step accumulation of knowledge, like mathematics. It can still be a problem on other courses if the television programme is made on the assumption that students will have read certain printed material before watching. For instance, on our second study, a television programme, a radio programme, and the correspondence text were very tightly integrated. Students were expected to work in the following sequence:

1. correspondence text (about 15,000 words).
2. broadcast notes - 25 pages!
3. television programme.
4. radio programme.

The course was on educational decision-making, and the unit examined how educational decisions at a local government level were made. The TV programme showed an actual meeting of the local Education Committee, with only limited interpretative commentary, the students themselves being expected to look out for points covered in the correspondence text. In fact, the programmes went out in the same week in which they were supposed to read the correspondence text, and very few students actually worked through the material in the right order. A significant finding was that students who did not do the necessary pre-reading were more likely to find the programme unhelpful, and this particularly affected the radio programme. Another important finding was the difficulty students had in taking notes - as they were asked to do - during the programme.[1]

I don't unfortunately have time to give more illustrations from the 24 studies. There are though some general points that can be made:

First: the studies emphasise the importance of studying programmes within the total context of a students' learning.

Second: from this, and from the studies themselves, it is clear that the success or failure of a programme may have nothing to do with the quality of the programme itself, but with the context in which it is received (assuming a generally high level of technical competence in the production). Producers then should pay attention to other aspects of a course than just the production of a programme. For instance, when students are overloaded with reading, this is likely to diminish the impact of a television programme.

1. GALLAGHER, M. (1975). Broadcast Evaluation Report No. 2: E221 Cumbria Case Study: Milton Keynes, Open University.

Third: our studies have highlighted student differences in reactions to programmes. As we have already seen, one important dimension in our situation is the extent to which a student is on schedule. The more the students are on schedule, the more they are likely to appreciate the programmes. Probably related to this, students with the highest end-of-year grades tend to watch(and particularly listen to radio programmes)more than other students - but there are strong differences in other dimensions as well.[1]

Fourth: the studies have shown the importance of good supporting notes for the broadcasts. Pre-broadcast notes should be brief, but should clearly state the purpose of the programme, and what students are supposed to do before, during and after seeing or hearing the broadcast.

Fifth: in each of the studies, various production techniques, such as silent mathematical animations, captions identifying speakers at meetings, the use of mechanical models for demonstrating abstract concepts in maths., and so on, were evaluated. In most cases, the techniques themselves did improve learning, but in almost all cases, improvements in the way they were used in the programme were needed, if the programme was to achieve its objective. For instance, clever models may take up too much time in the programme, the producer being tempted to make too much of the model, and not the teaching point it was designed to illustrate.[2]

So we got some findings, but what happened as a result? Well, for every study written up so far, either the programme was in fact remade (not always because of our evaluation, although the evaluation even then was useful for determining exactly what changes needed to be made to the programme), or the evaluation directly influenced programme policy on a subsequent course. It is also clear that alterations to a course to strengthen the role of television and radio were possible without having to remake programmes - for instance, alterations to the timing and sequence of programmes, to cut-off dates for tutor-marked assignments, and to the broadcast notes for subsequent years, can all be made without great additional cost. Most important of all, though, it is that producers and academics appear to have learned from the experience. Although we were often able to make specific recommendations, usually the academics or the producers themselves were able to see what action would be needed, and were then able to carry this experience forward into new courses. So far, each study has resulted in at least one new major point of importance which can be generalised to new situations. Indeed, the studies are now so popular that we had requests from course teams to carry out a total of 87 different evaluations this year.

The management level

I'd like to now turn to an area which I believe has been grossly neglected by researchers, and that is research into the problems that face managers of educational broadcasting systems. At the Open University, we have a committee which is responsible for the allocation of broadcast resources between different courses. I know of no

1. KOUMI, J. (1976). Broadcast Evaluation Report No. 19: A302 Studying the Novel: Milton Keynes, Open University.
2. BATES, A.W. (1975). Broadcast Evaluation Report No. 3: T291 Fourier analysis and transducer response: Milton Keynes, Open University.

studies which give guidance on how to allocate programme resources between different kinds of courses. How do you decide for instance whether to give the same number of programmes to a geography course as to a science course? Nor do I know of any studies which help managers to plan a careful husbanding of educational broadcast resources in a situation of rapid growth. These are both problems being faced at this moment at the Open University. Our major problem can be quite simply stated. We do not have enough transmission time for all the programmes we want to produce. The University has estimated that eventually it will need 50 hours a week television time when the University is in a steady state - i.e. when it is offering a full range of courses. This date is estimated to be - rather sinisterly - 1984. We are only just half way to offering all the courses we plan, and yet we are already using 33 hours a week television time - 3 hours more than the BBC promised us in the initial agreement. Where are the extra times going to come from?

To add to the complexity of the situation, the government has set up a committee to look into the whole future of broadcasting in Britain - the Annan Committee. The University was anxious to find out whether students were actually making use of the broadcasts they were already getting, so that it could put its case to the Annan Committee.

So, to provide information to help in the University's examination of these issues, we carried out at the end of 1974 a postal survey of over 12,000 students across all courses (58 at the time). We obtained an 82% response rate, and the results proved to be very interesting.[1]

First of all, virtually all students now have access to both the TV and the radio programmes - 98% had BBC 2 sets, 93% VHF radio sets.

Secondly, without pushing into peak weekend and evening viewing times (after 7.30 p.m.), we were already using virtually all the available time which was suitable for more than half the students.

The third and most crucial finding was that there was no single time when more than 80% of students on a course could watch - because there were always at least 20% of students who were away, or working shifts, or unable to get home in time. Now at the time of the survey, all programmes were repeated. The combination of two times meant that nearly all students could watch once. For instance, although rarely more than half the students watched the early morning transmissions, they were used by substantial numbers, providing a useful second opportunity if the other time was missed. In addition, for a fairly small but significant number of students, early morning transmissions were actually preferred.

Now does it matter if some of the students can't get the programme? Well, there is divided opinion within the University, but I think it does matter. When the University began in 1971, it was thought that up to 10% of the students would live outside BBC transmission areas. Consequently only one of the four foundation courses, Science, advised students not to take the course if they couldn't watch the television programmes. On the other courses, students were not assessed or examined on the broadcast material, and the courses were designed so that although the broadcasts related

1. BATES, A.W. (1975). Student use of Open University broadcasting: Milton Keynes, Open University.

to the correspondence texts, it was not essential to watch them for full understanding. In Science, though, television was used for demonstrating experimentation and laboratory techniques, and students were on occasion likely to be asked assessment questions which could only be answered if they had seen the relevant programme.

Over the last two or three years, an increasing number of courses in other faculty areas, particularly Social Sciences, have been basing occasional questions on broadcast material. There is now growing qualitative evidence that students actually prefer programmes which are linked to assessment, and this is certainly reflected in the viewing figures.

Before the survey, it was thought that the transmission problem could be solved by gradually reducing the number of courses with repeats. But how will we decide on courses with repeats? Obviously, those courses so designed that broadcasting is an essential component are more likely to get repeats. It is also likely that at least one of these transmissions will be at a reasonable time. Consequently, courses where broadcasting is not essential will get only one transmission, probably at an inconvenient time. But if the broadcast is not essential, who is going to watch it an an inconvenient time? It will be very difficult then to justify the use of broadcasting at all on such courses. Unfortunately, - or fortunately, I'm not sure which - course teams are realising this, and are increasingly designing their courses so that the broadcasts are more integral and so assessable. The hard fact is that in 1977, at least 20 courses will not have repeats of television programmes, and by 1984, less than half will have repeats, unless a lot more transmission time can be found.

Without repeats though course teams cannot reach all students by direct transmission, and this will inevitably have a deleterious effect, preventing broadcasting providing important educational experiences which would be difficult to provide in any other way - undoing the progress the University's Broadcast Sub-Committee has made in identifying such functions for television and radio. The report based on the survey raises these issues, which will have to be resolved before the end of next year. It has been distributed to every academic and BBC/OU producer in the University.

Anticipating the problem caused by lack of repeats, we carried out in 1974 a pilot investigation of the feasibility of providing video-cassette facilities in 10 of the 270 local study centres.[1] We experimented not only with different kinds of machines, but with different ways of organising a cassette system based on study centres. We tried providing a copy of every programme at one centre, at other centres students recorded, either manually or automatically, just the programmes they wanted, in one or two other centres the college itself recorded programmes at the request of students, and at yet further centres a central library system operated, by which students sent a card to OU headquarters requesting a programme, which was copied centrally and mailed direct to the study centre, where the student watched the cassette and then returned it to the OU headquarters. It could then be used again for other programmes. The central library system in fact proved to have the best balance of student convenience, reliability and cheapness. The study showed though that any video cassette system for the whole country had two disadvantages: first of all, it would cost an additional £200,000 a year to run;

1. GALLAGHER, M., and MARSHALL, J. (1975). Broadcasting and the need for replay facilities at the Open University, British Journal of Educational Technology, Vol. 6, No. 2.

and secondly a quarter of the students couldn't use it, because they lived too far away from study centres to visit them at all frequently. However, a combination of single transmissions and replay facilities would probably suit nearly all students.

At this moment, the possibility of using a cassette back-up in study centres, and a large number of other issues - such as overall viewing and listening figures - arising from the report, are being discussed by various committees within the University. By next May, we should hear from the government what our finances will be over the period 1977 to 1979. The University is now, as a result of the survey and the video-cassette study, in a position to decide whether or not to use money for a cassette system in study centres, and is now aware of the consequences for broadcasting at the OU if it doesn't provide viewing facilities at study centres. If the University has to wait on the government as late as July for its money (and last time we didn't know until later than that) we are sufficiently confident that we could still have a video-cassette system fully operational by the time the January 1977 intake of students begin their studies.

There is one other study we have carried out at a management level, and that is an attempt to identify teaching functions for which television and radio are particularly appropriate in the OU situation. We now have a list of over 30 functions for television and 16 for radio. I don't have enough time to describe these, except to say that the list is being developed to assist in the allocation of resources between competing bids from course teams.[1]

There are two general points I'd like to make about research at a management level. It is essential that researchers themselves are involved in decision-making. I have been a member of the Broadcast Sub-Committee since its inception in 1971, and I was therefore able to foresee the problems arising. All three studies I have mentioned arose from our initiative. My being a member of the Committee enabled the survey to be designed and completed in time for its results to be used, and, on a technical level, allowed us to know exactly what questions and analysis were required. In fact, from the time the first questionnaire was sent out we were able to produce the full data analysis of over 500 tables based on over 10,000 questionnaires, within two months, and the whole report was written up within nine months. This could only be done because we knew beforehand exactly what information was required.

Secondly, although the questionnaire was specifically designed to provide information on transmission problems, by providing viewing and listening figures in a reliable and comparative form across all courses, the report is beginning to make the University, as a whole, examine much more closely than previously the role of broadcasting, and in particular its relationship with assessment. These issues are not new - they were being raised before - but not much attention was being paid to them outside the BBC and the Institute of Educational Technology. By providing a detailed statistical and empirical context, the report makes it less easy for the rest of the University to avoid these issues.

The structural level

A recent and interesting development in our unit has been the growth of research into the structure of multi-media systems. This has stemmed from our involvement with

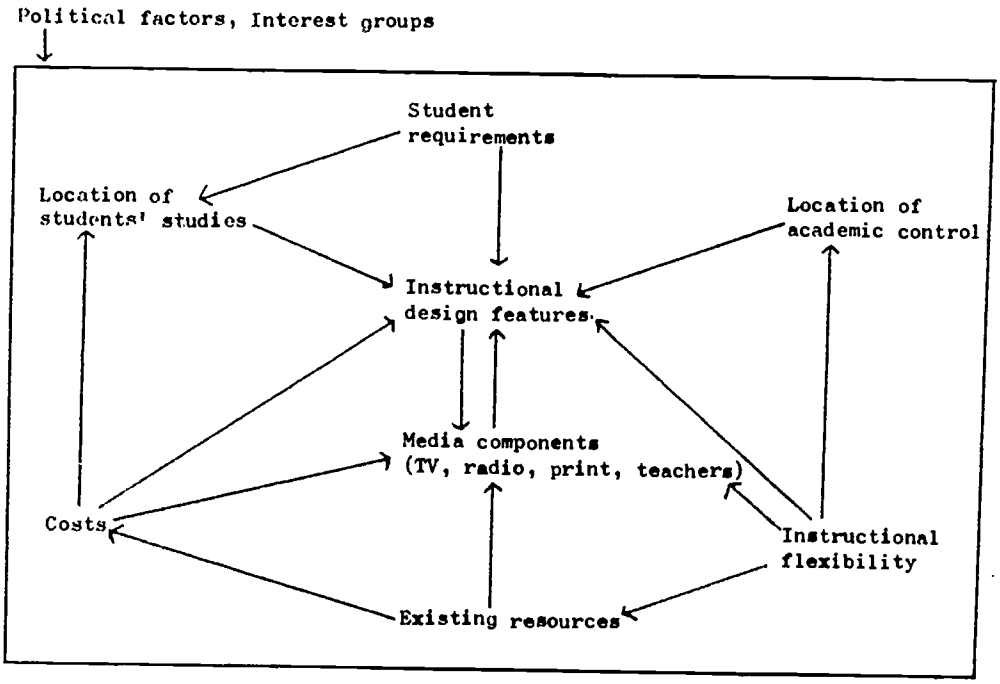
1. BATES, A.W. (1974). Suggested criteria and guidelines for the allocation of broadcasts (internal memorandum BC/4/6/c).

consultancy work, particularly in developing countries. We have been forced to examine various ways in which broadcasting can or should be organised in other multi-media systems, and in particular the question of control, and the best order in which decisions should be taken when setting up a multi-media system. These questions are in urgent need of research, for it is often these early decisions which make or break a multi-media teaching system. As Emile McAnany puts it:

> "Far too often evaluators have focused their investigations on learning and attitude outcomes and have ignored the administrative aspects of ITV projects. Yet, when projects fail, it is usually because their administrators have been incapable of solving crucial problems."[1]

We have been working on a model to assist in the early decision-making process, which attempts to prevent the educational aspects of decision-making from being swamped by less desirable considerations, such as political pressures, institutional inflexibility, and pressure from interest groups. Figure 1 (below) sets out some of the factors influencing the choice and mix of media components, and the instructional design which results.

FIGURE 1. Factors influencing the design of a multi-media teaching system



We believe that the choice and design of a multi-media teaching system are influenced by many other factors than purely pedagogic ones, and that it is the instructional designers job to be aware of such pressures, and where possible to counterbalance them. To do this, he must be aware of the full range of decision-making that must take place, and the way in which decisions are made and implemented. He must also be confident in knowing the order in which decisions about a multi-media system need

1. McANANY, E.G., HORNIK, R.C. and MAYO, J.K. (1973). Studying Instructional Television: What should be evaluated, Stanford: Institute for Communication Research, Stanford University.

to be made. To help in this process, we have begun to outline some decision-making models, based on Open University experience, and to see how well such models hold up in situations other than the Open University, through our consultancy work overseas. In this way, we are developing both a check-list of decisions, and a sequence of decisions, which allow for more than just pedagogic requirements to be accommodated.[1]

Conclusion

My aim in this paper is not to recount a full list of our research findings. These can be easily obtained, as all our work is available from the OU. My aim is to argue that a research office should be as essential as a production studio in an educational broadcasting outfit. I also believe that one will get the most out of such an office if six conditions are met:

1. researchers should be involved in the decision-making process.
2. researchers should be so placed as to be in close and regular contact with production staff, so the researchers are able to understand the producers' professional difficulties and their style of thinking, and so that producers themselves can be involved in the research process.
3. researchers must pay attention to the kinds of decision that have to be made in educational broadcasting.
4. researchers must pay attention to the general context in which students use educational television and radio.
5. researchers must be aware of pressures other than the merely pedagogic that operate on decision-making in systems using educational broadcasting.
6. there must be a sufficient number of researchers to be able to tackle a wide range of problems.

If these conditions are met, I believe that the investment will be more than amply repaid. But then, what else would you expect a broadcast researcher to say?

1. BATES, A.W. (1973). Educational and cost comparisons between open-network, cable and cassette systems of multi-media teaching: Milton Keynes, Open University.