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ABSTRACT

There is no centralized policy for using television and radio for inservice teacher education in Britain. Teacher training colleges have their own low cost production units, two cities have all their schools linked on a closed circuit cable system, and the BBC broadcasts on open circuit one or two series for teachers each year. The largest user of TV and radio for inservice teacher education is the Open University, which provides specially designed multimedia courses leading to a degree. It increases the stock of teachers by allowing working adults to study part-time, and it provides courses to improve the pedagogy of existing teachers. TV and radio are only a small part of the Open University system, the main core of the teaching being specially prepared printed correspondence texts; television and radio tend to be used for functions difficult to achieve through print. Finding sufficient transmission time so all students can view a course is a difficulty, and the facility to transmit a program twice at different times is crucial. Radio is not as well used as television; teachers, in particular, do not use these media as much as other students. However, television is heavily used by students, who do benefit from viewing and listening, and the Open University has a low dropout rate. (Author/JEG)

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RADIO AND TELEVISION

FOR

TEACHER EDUCATION

IN THE

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# Radio and Television for In-Service Teacher Education in Britain

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## SUMMARY

There is no centralised policy for using television and radio for in-service teacher education in Britain. Teacher training colleges have their own low-cost production units, two cities have all their schools linked on a closed-circuit cable system, and the BBC broadcasts on open circuit one or two series for teachers each year.

By far the largest user of TV and radio for in-service teacher education though is the Open University. This provides specially designed multi-media courses leading to a degree qualification. It increases the stock of teachers, by allowing working adults to study part-time, and maybe change their occupation to teaching. It updates and improves the academic standards of existing teachers in Britain, the majority of whom do not have a degree. And it provides courses in Educational Studies, to improve the pedagogy of existing teachers.

TV and radio however are only a small part of the Open University system, the main core of the teaching being specially prepared printed correspondence texts. Television and radio tend to be used therefore for functions which are difficult to achieve through print. Television is used in science to show experiments and field-work, to illustrate dynamic principles in mathematics, and for analysing the interaction between teachers and pupils in Educational Studies.

There are difficulties in finding sufficient transmission time to ensure that all students on a course can see a programme. The facility to transmit a programme twice at different times is crucial. Students sometimes are not sure of how to use television and radio in their studies. Radio in particular is not so well used as television, and it appears that teachers in particular do not use these media as much as other students.

In general, however, the Open University is a big success, with a low drop-out rate and many graduates. Television in particular is heavily used by students, who do appear to benefit from viewing and listening.

## Modern Educational Difficulties

It has been said that modern telecommunications have turned the world into a global village. I do not entirely share that view, as I am fascinated by the rich variety that still exists within our world. Even so, there may be some truth in the statement, because I would guess that many of our problems in Britain are not so different from ones being faced in Poland and many other countries.

Our birth-rate in Britain is actually dropping, and as a consequence we are drastically reducing the recruitment of new teachers. Even so, we are still suffering from an acute shortage of teachers in certain areas, particularly in mathematics and the applied sciences. We are also worried that our educational standards are not improving fast enough to keep pace with the higher standards demanded by the rapid advances taking place in the rest of the world in technology and industrial management. There has been a disturbing trend for a long time for our most able young people to choose not to work in manufacturing industries, preferring work in government, education or service industries, such as journalism and television. The severe economic crises that have plagued Britain in recent years have led us then to question the relevance of our education system. No change however can take place without major improvements in the teaching profession. What role then does television and radio play in reforming our education system? And what are the prospects for strengthening that role?

## Television and Radio for Teachers in Britain

First of all, I must make it clear that there is no centralised government policy in Britain for the use of broadcasting. The BBC, for instance, is completely independent of the government, and determines for itself what its priorities will be, as do the commercial television and radio companies. Consequently, there is in Britain a wide variety of ways in which television

and radio are used, even for teacher education.

At the smallest scale, many of our teacher training establishments have simple, low-cost video production units. These are used for a variety of purposes, such as training for drama teaching, or for film and television appreciation. Above all, though, these video units are used for recording and analysing the behaviour of the student teachers and their classes in actual classroom situations (what we call "microteaching").

In our two largest cities, London and Glasgow, all the schools are connected to a cable television system. Each of these cities has its own educational television production unit, making programmes both for the pupils and for the teachers. However, both of these systems have run into major difficulties recently, and may well be closed down soon.

At a national level, the BBC usually transmits each year one or two series aimed specifically at teachers. This year, for instance, there will be a television series on the teaching of physical education, and a radio series called "Teaching Young Readers." There are of course many programmes aimed at schools, but which are not direct teacher training programmes.

By far and away the largest user of television and radio, though, for teacher education is the Open University.

### The Open University System

Before I describe how we use TV and radio in teacher education at the Open University, I must tell you, as briefly as possible, about the Open University itself.

It was set up in 1969 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. Any adult resident in Britain may apply, and the Open University now has 67,000 enrolled students. No previous educational qualifications are necessary. Students, most of whom are working, study

primarily at home, in the evenings and at week-ends, and they obtain a degree by accumulating credits, six for an ordinary degree, eight for honours. A credit requires roughly the equivalent of 12 hours study a week, for 32 weeks. To obtain a credit, students are continually assessed, needing to complete successfully at least six assignments per year (which are marked by part-time correspondence tutors) as well as an end-of-course supervised examination.

Students can choose from over 100 courses, although every student must complete at least one, and usually two, foundation courses, before moving on to courses at higher levels. The five foundation courses are interdisciplinary.

SLIDE 1 (POLISH)

There is one in Arts, one in Social Sciences, one in Mathematics, one in Science and one in Technology. A full-credit course will consist of the following components:

SLIDE 2 (POLISH)

All full-credit courses

32	correspondence texts	SLIDE 3
16-32	television programmes	4
16-32	radio programmes	5
6-12	tutor-marked assignments	6

For some courses or some students

computer-marked assignments	7
face-to-face tutorials (at local study centres)	8
summer schools (at conventional university campuses)	9
set books	10
computer terminal facilities (at local study centres)	11
home experiment kits	12

Every course is designed by a team.

SLIDE 13

A team will consist of several academics (usually employed full-time by the Open University), one of whom will be chairman, BBC producers, full-time regional staff, an educational technologist, and an administrative assistant. Each team will be backed up by graphic artists, editors, photographers, librarians, etc., all employed by the University. The course team as a whole decides on the content and structure of the course, and on the policy for the use of television and radio. An individual television or radio programme is the joint responsibility of an academic and a producer. It takes nearly two years to prepare a course before it is first presented.

Teachers at the Open University

It should be clearly stated that the Open University was not designed just for teachers, but they do constitute an important part of the Open University student body.

In Britain, we have two classes of teachers. Graduate teachers take a standard three-year academic degree, followed by a one-year full-time postgraduate teachers training course. Non-graduate teachers take a three year course at a teachers training college, leading to a teaching certificate. Graduate teachers get paid more than non-graduate teachers. Since the government recognises an Open University degree for teachers' salary purposes and since two-thirds of the 300,000 teachers in Britain are non-graduates, you will not be surprised to learn that one-third of Open University students are non-graduate teachers.

Consequently, there is a Faculty of Educational Studies, which offers at the moment 12 different courses. Any student - whether a teacher or not - who has successfully completed a foundation course, may if he wishes take an Educational Studies course. Nor surprisingly, the Educational Studies courses are taken mainly by teachers, but since students can choose any course in any

faculty (subject to certain restrictions), most teachers will also choose to study courses in other Faculty areas as well. Consequently, on most Open University courses, and not just in Educational Studies, between a quarter and a third of the students will be inservice, non-graduate teachers.

### The Role and Place of Media

Although television and radio play an important role in Open University teaching, the core of the teaching system is the specially designed printed material. Students will receive at the most in any one week only one television programme (of 25 minutes length) and one radio programme (of 20 minutes length). Even with associated reading and follow-up activities, the student will usually spend no more than an hour studying the television or radio material. Often it is much less. In some courses, there is only one programme a month. This compares with at least 6-8 hours per week spent reading, since each week's set reading averages about 15,000 words.

Even so, television and radio do have a unique role. With over 1,500 television and 1,500 radio programmes already made, it is difficult to summarise their role, but I will describe a number of important functions.

For students studying primarily in their own homes we have found television to be essential in the teaching of science. Our Science course teams have designed ingenious experiment kits which are loaned to students, for use in their homes, and on nearly every Science course, there is a one-week, compulsory residential course in the summer at a conventional university. These are not sufficient however for providing the practical laboratory work and experimentation necessary for the study of Science at an undergraduate level. Television therefore is essential for supplementing the home experiments and summer school experiences. It is used to show experiments, particularly where the equipment is dangerous, expensive or inaccessible, in nearly all disciplines. It is used to show laboratory techniques, such as the preparation and analysis of slide segments. It is used in place of field visits, particularly in ecology and

Earth Sciences. Very often, we have found that high-quality television facilities have advantages over conventional teaching methods. By careful editing and presentation, television is economical in terms of student time, experimental phenomena can often be more clearly seen on a television screen than in a conventional laboratory, and all students have access through television to the most expensive and modern laboratory equipment, where this is appropriate. It is also worth selecting, preparing and presenting experiments more carefully than one would normally be able to do in a conventional teaching situation, since at the Open University the programmes will last for over six years, and hence may well be seen by 30,000 students or more.

We have also found television very useful for certain aspects of mathematics teaching. In particular, we have found it useful for illustrating mathematical concepts which describe or measure dynamic change or movement over time, such as differentiation and integration, or functions. This can be done by using conventional or even computer animation. Television is particularly useful for demonstrating mathematical concepts which present or describe features of two, three, or  $n$ -dimensional space, such as Euclidean geometry, factor analysis, and vectors. Also, by the imaginative use of specially constructed physical models, or animated diagrams, difficult abstract ideas can sometimes be presented in a concrete form, enabling students to visualise or approach from a different viewpoint otherwise abstract concepts.

SHOW FILM EXTRACT

We have made a collection of different examples of the use of television for teaching mathematics, with an accompanying handbook, which explains why television was used in this way, some of the production features, and some of the advantages and limitations of using television in this way. This package can be purchased from the Open University, and I do have a copy with me.

A major function for television, in both Educational Studies and Social Science courses, is to show what we call primary source material. Using film

or video-recording of real events, and by means of careful selection and editing, television can be used to illustrate or clarify the more general principles described in the print material. For instance, the interaction between teacher and pupils, or between young children, can be filmed and analysed. SHOW FILM EXTRACT The University has taken cameras into a local government council meeting, to show how decisions in education are made. Radio and television have been used to interview politicians and leading civil servants, to obtain authoritative statements of policy and descriptions of how policy is made and implemented. Often, such information is not publicly available in print. Using television in this way allows students to test out the academic principles learned from their books against the real world, and allows us to get round the problem of organising and controlling school visits or school observation for very large numbers of students.

#### Particular problems

With such a large number of courses, one of our major problems is finding enough transmission time at suitable times for our students. We have three networks in Britain, and we transmit on two networks (BBC 1 and BBC 2) early in the morning (6.00 a.m. to 7.50 a.m.) and on one network in the early evening (5.00 p.m. to 7.00 p.m.) and on Saturday and Sunday mornings. Each programme is transmitted twice, the repeat being at a different time. Already we are using over 35 hours a week transmission time, which is the maximum we can really expect, unless another national network is created. Since we still have many more courses to add to our stock, we are having to drop repeats in many courses. We have found the repeat facility however to be extremely important, since there is no single time when all the students on a course can watch, due to shift-work, travel times, etc. With a repeat, however, we can expect to reach virtually all students on a course.

We have also learned that students will use television and radio in large numbers only if they can see that it has direct value in their studies,

particularly regarding assessment. They are generally not interested in "background" or "enrichment" programmes. Increasingly, then, our course teams are using television to provide experiences which cannot be obtained elsewhere in the course, and which the students are expected to draw on in their assignment and examination answers. Hence the importance of the repeat facility, to ensure that the students can get the broadcasts. This has stimulated us to mount a project to find out whether there are alternative and cost-effective ways of delivering audio-visual material to students, for courses with low student numbers. This would then free time for repeats of broadcasts, for other, larger courses.

There is one other problem of particular relevance to teacher education. In general, our viewing figures in particular are very high. Most students on most courses watch most of the programmes.

SLIDE 14

The viewing figures are lowest though for courses in Mathematics and Educational Studies. The Mathematics figures are understandable, because there is a higher drop-out rate on these courses, which of course affects the viewing figures. This does not apply though to Educational Studies. We don't really know the reason why their figures are so low. The reason put forward by a Faculty of Educational Studies working group was that teachers are more prejudiced against the idea of using television for learning than other Open University students. There are though alternative hypotheses. One is that Educational Studies courses do not lend themselves so well to the use of television. Another is that a wrong or inappropriate policy has been chosen for television; or it could be that the programmes themselves are not very well constructed. Whatever the reasons, the University has in practice been less successful in getting students to watch in Educational Studies, and we are trying to discover whether teachers are less receptive to the idea of learning from television, and if so, why.

We have also found that students use radio less than television.

SLIDE 15

We believe that this is because radio has not been given such clear and unique roles as television, but also, some students clearly find radio a more difficult medium to learn from than television or print.

### Evaluation

How successful has been the use of television and radio at the Open University in in-service education? I have shown that these media are parts of a tightly integrated, multi-media system, and so it is difficult to evaluate them in isolation from the system as a whole. The Open University as a whole has had a major impact on teacher education, in the following ways:

1. It has increased the stock of graduates with science, technology and mathematics backgrounds, many of whom are likely to change their jobs to teaching. For instance, each year the Maths. foundation course enrolls 2,000 to 3,000 new students. When the Open University opened in 1971, it overnight doubled the number of mathematics places at British universities.

2. It has improved the academic standards of existing teachers. Many of our existing teachers of mathematics do not have a degree qualification. Even many of our graduate mathematicians are unfamiliar with developments in modern mathematics, and the Open University courses are very modern indeed. (I have some examples with me.)

3. It has improved the pedagogy of our teachers, by providing advanced courses on the theory, philosophy and economics of education, and allowing in-service teachers to keep in touch with new developments.

4. Very importantly, the television programmes and printed correspondence texts are available to the public. The books are on sale in bookshops. The television and radio programmes are openly transmitted, and can be watched or

listened to by anyone with a television or radio set. Thus "incidental" learning often takes place by teachers who have no intention of enrolling with the Open University. The programmes are also available on cassettes and films - and can even be purchased in Poland! The Open University teaching materials are extensively used by conventional universities and training colleges. The "spin-off" effect then is quite considerable.

The system as a whole has proved to be very successful. Already, 20,000 students have graduated. The average successful completion rate per course is 70% - which more than favourably compares with conventional universities. Although the system requires a high level of expenditure - £20 million per year - we are very cost-effective, producing graduates at one-third the cost of conventional universities.

But how much does broadcasting contribute to this success? We have seen that it occupies a comparatively small part of the students' study time. It constitutes however 20% of the University's overall costs. Is it worth it?

I can only give a personal opinion. On balance, I think it is. Our research indicates that there are major individual differences in the way Open University students learn. By providing a variety of media, a variety of teaching materials and teaching approaches, the University not only increases or reinforces student motivation, but it also caters for individual differences in learning. Television and radio help provide this variety. As we have seen, most students do feel it is worthwhile to watch most programmes on most courses. (I wonder how many students feel that way about lectures?) For some subjects, such as in Science, we could not put on the courses without television.

Our research, although still tentative, does indicate that students who watch and listen do better in their grades and are generally more able to apply what they have learned to new situations, than those who do not watch or listen.

There are many problems and doubts, of course, but both the University and the government have sufficient confidence in the value of broadcasting that, even in today's very difficult economic climate, it has been agreed to build our own

television and radio production centre at a capital cost of £5½ million. However, I believe very strongly that for advanced level training and education, broadcasting must be used as part of a multi-media system - and that the decision whether or not to use broadcasting must depend very much on the context in which it would be used. For us, broadcasting is important. For others, it may well be better to manage without.