The use of video as a teaching resource in a new university

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Abstract

This paper reports on a survey of the use of video as a teaching resource within one British University, drawing on evidence gathered during 1995 from fourteen Schools within its four Faculties. It identifies the factors and issues which influence the use of video in teaching, including management of video resources within the Schools; how video is used to support teaching strategies; and its perceived usefulness as a teaching resource. Findings note the extent to which video is used across the University; the factors that support or discourage its use; and the awareness and expectations that teaching staff have of video as a teaching tool. The discussion offers some recommendations as to how video use may be supported and improved within the University. The research could form the basis for a larger study to establish whether the findings from this survey may be typical of the picture in higher education generally.

Introduction

Whilst acknowledging the work done on the effectiveness of different media as teaching and learning resources (Bates, 1987; Rowntree, 1992; Laurillard, 1993), and on the different interpretative or cognitive skills that they require (Salomon, 1979; Olsen and Bruner, 1974), this paper confines itself to the results of original research on the specific use of video as a teaching resource in a single higher academic institution. It does not concern itself with distance learning courses, where such use would be expected, but concentrates on course delivery to full and part time students who study at, rather than with, one Scottish University.

Rationale

Although video and broadcast use in teaching is well established in schools (Moss, Gunter and Jones, 1991) and has firm vocational and pedagogical relevance in Further Education (BBC/SFEU, 1994), its place in residential University teaching strategies is

reputedly low profile. As Educational Television Services within Universities fall prey to cutbacks, and investment in bespoke video gives way to Computer Based Learning and multimedia technologies, does video still have a place in Higher Education? This question must be considered in the light of current market trends in educational broadcasting, where a global expansion in educational video (either stand-alone or as part of mixed media packages) is evidenced by the BBC's satellite commitment with BBC World, and Murdoch's success with vocational programming on ZTV in Asia. Nationally this trend is reflected in the Cable Communications Association's undertaking to link all UK schools to cable television services. Given these factors, which clearly suggest that video as a teaching medium is not in decline, it was decided to undertake a pilot study of its present state of health within one Higher Education establishment, which could form the base for a larger investigation. The research was conducted within all fourteen Schools and four Faculties of The Robert Gordon University. The Robert Gordon University (formerly the Robert Gordon Institute of Technology) attained university status in 1992, and currently offers a wide range of courses from Fine Art to Mechanical and Offshore Engineering. Over 8000 students attend the University, which seeks to offer the intellectual rigour of Higher Education whilst producing: *"... versatile and resourceful practitioners ..."* (Mission Statement, 1992).

Such a Mission Statement encourages the use of all appropriate technologies in learning and teaching within The Robert Gordon University, and this is reflected by the availability of both technical support and facilities. New staff undertake a Tertiary Level Teaching Certificate, in the course of which they design video, audio or Computer Aided Learning (CAL) packages tailored to their personal teaching needs (one module of the course specifically addresses the use of video in teaching). Although such staff development is actively promoted, logistically only a small proportion of existing staff will have undertaken it.

The research model

The aim of the research was to *"identify the factors and issues which influence the use of video in a Higher Education establishment".* In order to execute this aim a research model was designed around the following areas:

- use—including amounts and types of video texts used; and factors encouraging or discouraging their use
- teaching—including how video is used to support teaching strategies; its perceived usefulness as a teaching resource, and what is actually taught using video
- resource management and access—including information sources for video selection; responsibility for and access to video materials.

A case study approach was adopted as being the most appropriate means of applying the research model within a teaching environment. In order to obtain cooperation for such a study all teaching staff were sent a flier, which established first, whether they used video in their teaching, and second whether they would be willing to participate in the research. This was an essential precursor, because although superficially the return from the flier was small (only 135 out of 408 sent), it did identify 100 staff who

were prepared to complete the longer questionnaire used in the case-study. Staff who did not use video in their teaching were asked to state reasons why, and their responses used to inform design of the questionnaire. For example when "*inappropriate subject material*" or practical factors such as "*large class sizes*" were quoted as barriers to video use they were built in as possible answers to multiple choice questions. Although the aim of the project was specifically to identify factors influencing the use of video, the reasons given for non-use are clearly pertinent, and are discussed in some depth later in this paper (see: Factors discouraging the use of video).

The questionnaire

Using the framework devised for the research model, the questionnaire was divided into three sections, Use; Teaching; and Resource management and access, and was designed to gather both quantitative and qualitative data through multiple choice and open questions. In determining the multiple choice answers for sections 1 and 2 the research team drew on established findings on the generic strengths of video as a teaching aid (Bates, 1984 1987; Salomon, 1979; Laurillard, 1993).

Use

This section identified how often staff used video in an academic year (including repeats); the types of video that they used; what factors encouraged and discouraged them to use it in their teaching; and how this situation could be improved.

Teaching

In this section questions focused on the teaching applications of video, asking staff if video use was built in at the curriculum planning stage; whether they used it to teach core material or associated learning skills (such as decision making); if it was used as a supplement to or substitute for lectures; how useful they found it; and whether they provided follow-up activities for students during/after viewing. Staff were also asked if they would appreciate some training in the selection and use of appropriate video materials.

Resource management and access

This investigated the information sources that staff used to select videos; and their awareness levels of what videos were available, where they were kept; and who was responsible for them. The structure of this section drew on previous research into video use in schools (Barford, Williams and Wilson, 1994) and Further Education (BBC/SFEU, 1994).

The research findings

Response to the questionnaire was 79%. As all of the 100 original respondents used video in their teaching both the "sent" and "returned" figures for the questionnaire illustrate the pattern of video use across the University. This pattern is presented by Faculty in Figure 1.

A significant finding was that video is used by teaching staff in every School in the University, which provided representation, if not a cross-section, of all staff. Given that
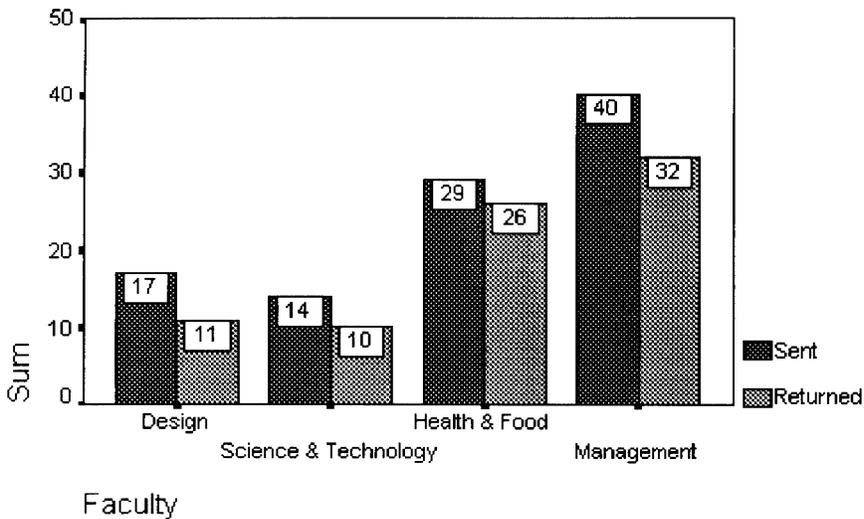
Figure 1: Video use by Faculty

the aim of the project was to *"identify the factors and issues which influence the use of video in a Higher Education establishment"*, and that such use was confined to roughly a quarter of teaching staff, the following tendencies must be accepted:

- findings will only represent the views of a minority of staff
- these staff will be predisposed to favour video use

The research team attempted to balance these tendencies by conducting a supplementary investigation into why teaching staff chose not to use video. This took the form of an Email questionnaire directed to a random sample of 200 teaching staff who had not replied to the original flier. Again the response was small (54 replies), which was not unexpected given that these staff had already indicated a lack of interest. The findings from this supplementary survey are discussed below.

Amounts of use
Across the University video is used most frequently in the Faculty of Design: 90% of respondent staff used it more than six times a year, compared with 62% in the Faculty of Management; 40% in Science and Technology; and 33% in Health and Food. Frequency of use indicates that these staff considered video to be an essential teaching tool, particularly in areas where the visual nature of the subjects being taught is commensurate with this medium. The highest number of video users (32) was concentrated in the Faculty of Management, with the Faculty of Health and Food (26) a close second.

Types of video used
Respondents were asked to indicate the types of video texts that they used from a checklist. The results were as follows:

- recorded off-air television programmes (56%)

- Open University programmes (16%)
- commercially produced video (71%)
- home grown video made by staff and/or the Educational Development Unit (24%)
- video made by students (project presentation etc.) (26%).

Commercially produced and off-air recordings are most used, and their use is dictated by subject matter. The School of Surveying for example uses tapes donated or loaned by industry; and the School of Pharmacy uses British Medical or Royal Pharmaceutical Association material which is of direct relevance to their subject areas. It is not surprising, therefore, to encounter the sporadic use of video in the Faculty of Science and Technology. This Faculty had the lowest response rate per capita, with 50% of these respondents using video less than 3 times a year. Staff who did use video preferred (80%) commercially produced and off-air texts to teach core material (see the section on Teaching) but expressed difficulty in finding relevant material in their subject field (see the section on Factors discouraging the use of video). The nature and timescale of video production means that content is unlikely to be state of the art, particularly in Science and Technology which is a dynamic discipline subject to rapid change.

Factors encouraging the use of video in teaching
Respondents were asked if the following factors encouraged them to use video in their teaching. The figures in brackets indicate agreement.

- bringing the outside world into the learning space (77%)
- magnification of reduced scale objects (7%)
- visual representation of ideas and concepts (47%)
- drama/personification of real-life situations (39%).

These findings indicate that video is being used for its generically most useful qualities, that is as the most appropriate medium for teaching visual concepts.

Responses from the Faculties of Management and Health and Food, which have the largest numbers of staff using video, confirm the need for video to demonstrate real life situations from business and industry to students. *"Bringing the outside world into the learning space",* and *"the visual representation of ideas and concepts"* were the most important factors for staff from these Faculties; with the inclusion of *"visual representation"* (e.g., the appearance of diseases) as an equally significant secondary factor for staff from the Faculty of Health and Food.

Factors discouraging the use of video in teaching
The following factors were offered, and again agreement with them is indicated by the figures in brackets.

- lack of knowledge of what is available (42%)
- inappropriate subject material (38%)
- problems with accessibility/reliability of hardware (20%)
- problems with room layout (18%)
- size of classes (21%)

- unfamiliarity/lack of training in video use (7%)
- lack of time to integrate it into teaching (24%)
- cost (16%).

Practical, rather than educational factors seem to be discouraging staff from using video in their teaching. This finding must be taken in context, given that respondent staff already use video in their teaching and are unlikely to be discouraged from its use by reservations about its educational credibility. Questions asked paralleled those sent to video users, with the inclusion of "personal preference" as a factor for non-use. Only 7% of the respondent non-users actually cited personal preference as a factor: none of them objecting to video "*in principle*" but preferring to use CAL packages instead to overcome: "*... remoteness of contact, lack of interaction, and lack of feedback.*"

Practical problems discouraged 24% of non-users from including video in their teaching, reinforcing the experience of video users. 20% of users experience problems with accessibility or reliability of hardware, particularly in terms of non-standardised or out-of-date equipment; and 24% do not have enough time to prepare/edit video material for integration into teaching. Non-users also mentioned problems with "*lack of clarity*" in video images, "*poor projection facilities*" and "*monitors that are too small for large classes*", giving the impression that they had used video in the past but did so no longer. Cost was also a significant factor for non-users, particularly in the science Faculties.

Use of in-house video in teaching is low, only 24% overall, with highest use in the Schools of Art and Health Sciences. Respondents from both these Schools mentioned difficulty in finding ready made video in their subject areas, in default of which they make their own. The problem was compounded by a lack of time to integrate video use into teaching, particularly when producing or editing material for use with particular student groups, or to support Course requirements. Some respondents felt that the trend towards investment in computer technology in the University may be over-shadowing investment in lower-tech hardware such as VCRs.

Overall the most significant barriers to video use were inappropriate subject material and lack of knowledge about what video texts were available. Inappropriate subject material was mentioned by 38% of video users and 66% of non-users—the single largest factor for the non-user group. Inappropriateness was defined as a lack of quality (and sufficiently high level) material, particularly in science. Much of the currently available programming was seen as suitable for a mass audience, rather than a specialised academic one. Non-users of video also saw the form of video texts as problematical: "*Most videos tend to be a 25 minute television programme. I require 5–10 minute soundbites to supplement teaching*" as well as their content: "*Some videos, for example on food hygiene, are an insult to the intelligence of the average undergraduate.*"

For video users lack of knowledge of what video texts were available formed the greatest barrier to its effective use: 42% of respondent staff finding this a problem. Interestingly

this was less of a problem for non-users. Although 38% of non-users also had difficulty in this area, comments from this group indicated that a lack of suitable resources rather than a lack of knowledge was their main concern: *"Rather than knowledge, it is the time to seek out appropriate material ... there are resource implications."*

In offering suggestions as to how the above might be improved the vast majority of video users stated that a central database of holdings within the University would greatly assist awareness of what was available in-house. This could be supported by more publicity on what is commercially available. Non-users also offered central-isation of resources as a solution: *"The most useful thing to me would be to have a comprehensive guide ... not only categorised but accompanied by a short annotated description of content."*

Teaching
A majority of respondents (53%) built in the use of video in teaching at the curriculum planning stage, and were clear on the expected learning outcomes from its use. Awareness of methodologies, concept building, and experimental approaches to presenting ideas were all mentioned; as well as associated skills such as evaluation, presentation and group dynamics. Such findings give the impression that teaching staff are comfortable using video as a teaching tool, and are aware of its strengths and weaknesses. They appear to be less comfortable in selecting appropriate materials: 61% of staff would appreciate some training in the selection and use of video materials.

Staff used video in their teaching in a variety of ways:

- as a supplement to lectures (81%)
- as a substitute for lectures (11%)
- during groupwork (49%)
- as an individual learning package for students (16%)
- as part of a multimedia or mixed media package (14%).

Although only 14% of staff actively use video as part of a multimedia or mixed media package, several respondents appended *"not yet"* to the last option, which indicates that they were planning to do so.

The majority of teaching staff (81%) use video primarily as a supplement to lectures. This supports the general finding that most staff (83%) use video for the delivery of core material, and also reinforces established research (Moss, Jones and Gunter, 1991) in the use of television in schools, where teaching staff see broadcasts as a supplementary part of their teaching strategies and not as an alternative to them.

University staff also demonstrated an awareness of the usefulness of video in developing educational skills, as well as in delivering information. 49% of respondents using it during groupwork, and 16% as an individual learning package. 33% of respondents also used it to develop associated skills such as decision making; post-project evaluation; concept building; and awareness of methodologies.
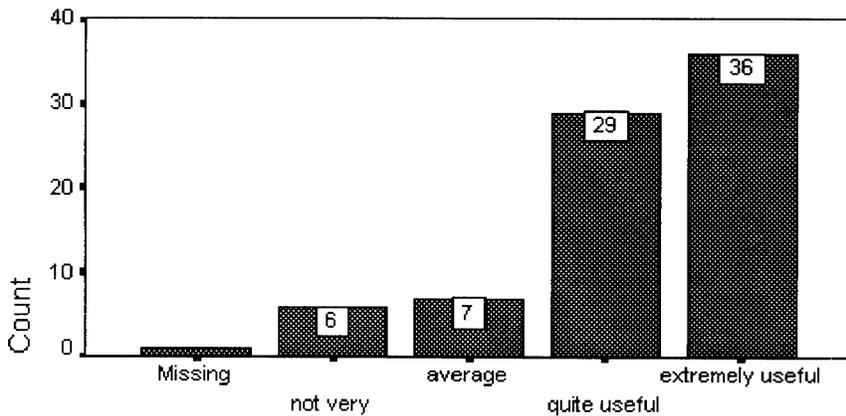
Figure 2: How useful as a resource?

On a semantic differential scale of 1–5, video was rated as *extremely useful* by 46% of respondent staff and *quite useful* by 37% (see Figure 2).

Reasons for this rating specifically mentioned factors such as *relevance* and *accuracy,* but most were concerned with the fact of video being the most appropriate or best medium for communicating particular ideas and concepts, either in terms of impact; *"video tends to stick in students' minds for longer than a discussion does"* or illustration: *"provides evidence of techniques used in working situations".*

Most (76%) staff recognised the need to reinforce learning by providing follow-up activities for students: *"it is pointless using video unless you incorporate an exercise (usually group based in my practice) to interpret/consolidate the video experience."*

These findings offer a positive input as to the continuing viability of video as a teaching resource. However despite this evidence that video is being used in an informed way, 61% of respondents indicated that they would appreciate some training in the selection and use of video materials. The need for training is supported by the fact that three quarters of teaching staff may be assumed not to use video at all. Although training is available as staff development, specifically in the Tertiary Level Teaching Certificate, as indicated earlier this tends to be confined to new staff and has had little take up with established teachers.

Resource management and access
This section of the findings concentrates on how respondents access the video material that they use in teaching. Staff were asked to indicate which information sources they used to select off-air or commercial video from the following options:

- direct contact with broadcasters/production companies (10%)
- fliers from the British Universities Film and Video Council (8%)

- Radio Times or newspaper listings (49%)
- listings from the Open University (16%)
- talking to colleagues (48%)
- library catalogue (34%)
- video loan service (34%).

The video loan service is provided by the University for staff training purposes, and offers video in subject areas such as People Skills, Communication, Management Skills etc., some which have been adapted successfully for teaching purposes.

Respondents also used personal or professional contacts, mail-shots, or *"luck"* to find the material that they wanted. As only 10% had direct contact with broadcasters, despite the fact that commercially produced video is the strand most used within the University, it may be assumed that the majority of this commercial material comes from industry rather than the broadcasting sector.

There was some confusion in respondents' awareness of who was responsible for the management of video within their particular School: 32% thought the library was responsible; 19% named their School technician; and 53% thought individual lecturers were responsible for their own material. 26% were unaware if there was any list or catalogue of videos held in their School, and 50% of staff simply recorded their own programmes for their own use. This finding would indicate that video access is a highly independent and de-centralised activity, and this is supported by the high percentage of staff using *Radio Times* or newspaper listings as an information source.

Availability of and access to video stock is compounded by the lack of a centralised lending system in the University. Both the Library and the Video Loan Service hold and lend video: both being used to about the same extent by 34% of respondents. This dual system complicates access; as does the fact that individual lecturers or School technicians tend to hold video stock in their own departments, and have little idea of what is held by colleagues. This situation could be remedied by including Video Loan Service and Departmental video on the Library OPAC system, even if the videos physically remained in their separate locations.

Summary of findings
- Video is used to varying extents by teaching staff in every School in the University and rated by the majority as *"extremely useful"*.
- Video is used most for curriculum delivery, and such use is dictated by availability of relevant subject matter. Staff who choose not to use video are primarily influenced by the lack of suitable subject material.
- Staff integrate video within their teaching strategies, and have clear expectations of the outcomes from its use in terms of both core information and skills development.
- Staff would appreciate additional training in the selection and use of video materials.
- Staff acquire video from a wide range of sources and are more likely to use commercially produced than in-house packages. This may be because they are unaware

of what is held in-house and because of the problem of producing their own material. This situation could be improved by a central database/catalogue of video resources held within the University.

- Video use is inhibited by lack of appropriate subject material of the required level and form, and by practical issues such as problems with hardware, size of classes and lack of time to integrate it into teaching.

Conclusions and recommendations

It would be precipitate to consider these results typical of the picture in Higher Education establishments generally without further research, but they do present some points of interest, particularly in the position occupied by video in teaching.

Although video is clearly an established and frequently used resource in the University, albeit by a minority of staff, the management of this resource operates on an *ad hoc* rather than a structured basis. The video selection and acquisition process adopted by lecturers tends to be independent and individualistic: operating both alongside and outwith existing support services such as the Educational Development Unit (EDU) and Viscom, the University's Production Company; the library, and the Video Loan Service. There is clearly a need for staff development to raise awareness and interest among the non-users, particularly in the light of findings that most non-users do not object to the use of video in principle.

The main recommendation to be drawn from this research is that the management of video use in teaching needs to be supported at policy level by addressing the promotion of existing services in the following areas:

- centralisation and dissemination of information about video resources. This could include resources already held in-house, as well as listings of commercial video suppliers
- the opportunity for staff training in video selection and use, and encouragement (and time) for staff to develop their own tailored resource material using the available facilities of EDU and Viscom.

A secondary, but no less important observation from the research is the emphasis placed on the appropriateness and relevance of video as a teaching medium by the enthusiastic minority of staff who use it. Staff who understand the importance of visual images are well placed to exploit the potential of multimedia technology: utilising that technology to support their teaching, rather than allowing their teaching to be technology driven (Koumi, 1994).

This research does not seek to suggest that video is the optimum educational resource. Problems with poor subject material, particularly when used without the backup of resource packs or follow-up exercises; and the perceived lack of inter-activity for students, are just two of the immediate disadvantages of this medium. Nevertheless there are clear indications from the findings that the participant staff do see video as having an important pedagogical role to play, even though they are more immediately concerned with the practical considerations relating to its use. Such findings are supported

by the recent launch of the Educational Broadcasting Services Trust *Shotlist* project, funded by the Higher Education Funding Council to provide subject based videos for the HE sector, particularly in the sciences. In addition Viscom, The Robert Gordon University's own production company, is developing a teaching programme of subject based videos for the School of Applied Sciences, which will provide tailored subject material: *"… presented in a manner that lends itself to the lecturing environment."*

It must also be stressed that the authors do not present this research as being representative of the picture in all HE establishments, but offer it simply as a pilot study. Their intention is to extend the work into a Scottish-wide research project on the use of video in teaching in Higher Education establishments. Such as study may well include some comparison of the "old" and "new" universities, which could reveal how far the use of video in teaching at The Robert Gordon University may be regarded as typical.

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