THE MAKING OF 8mm FILM LOOPS

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ABSTRACT

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This study is aimed to produce a quasi-self-instructional system to teach the rudiments of 8mm (silent) cine film production. 72 student lecturers were taught by traditional teaching methods how to make 8mm cine loops; in groups of three students per group, they made 24 loops. Each loop was assessed by two tutors; one was an educational technologist and the other tutor was one of a number of specialists knowledgeable in the various subject matters of the loops. Another 81 student lecturers were taught the same rudiments of cine film production by a cine (sound) film titled "The Making of 8mm Cine Loops (for Teachers)." These students then in groups of three made 27 loops which were likewise assessed. The assessment marks awarded to the loops resulting from the two different methods of instruction were then compared. No evidence has been found from which it can be inferred that as a means of presenting demonstrations and exposing information, this cine film is any more, or any less, effective than the classroom tutor who prior to the use of this cine film, had used traditional methods to instruct his classes.

A copy of the film "The Making of 8mm Film Loops (for Teachers) (super 8mm with magnetic sound; screening time: 35 minutes) has been deposited with Concordia University Library.

ACKNOWLEDGEMENTS

The ideas for the cinefilm, of which the script is shown as Appendix 1 of this study, were conceived many years ago in a small cottage in the northeast of England, wherein I sat beside blazing coal fires and at the (drinking) end of a seemingly perpetual service of cups of tea. When I was lost for a visual image for a projected shot in the film, I looked into the fire and there the bright red embers and flames scanned with uncanny accuracy the very pictures that I was seeking. If lost for a word, I read the leaves at the bottom of the teacup. Since it was my Mother who made both the fires and the tea, my first thanks are due to her.

I am also indebted to and wish to thank: Dr P. David Mitchell of Concordia University, Montreal, for his help in the planning and his guidance in my writing of the study; Lucien Guillaume without whose encouragement the writing, possibly, would not have been completed; and my daughter, Rosamund, for proof reading the typed copy; and the many others who have contributed.

Charles Bird
Richmond, Surrey
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THE PROBLEM STATEMENT

The Context to the Problem

Garnett College, London, is one of four Colleges of Education in the United Kingdom which prepare teaching staff for the colleges of further and of higher education. The College trains some 600 lecturers annually of whom about 120 attend a short course on how to make 8mm (silent) cine film loops. The objective of the course is to have the students in groups of three make a three minute loop in colour film, so that they will be able to make other similar loops without close supervision. The students coming on the course are assumed to have no knowledge of photography. Indeed, some of them may not have handled a camera before.

The course runs for three two-hour periods at weekly intervals i.e. for a total of six hours. The first fifty minutes comprises exposition concerning: the camera controls, the use of the camera and tripod; some factual information about film, the illumination of the scene, the filling-in of a shooting script form, and examples of some common faults from loops made by previous students. It is this exposition which is the subject matter of the following study.

The exposition, until this project began, was by traditional classroom teaching methods i.e. the course tutor mainly lectured, there was some question and answer, demonstration and class practice with equipment. So the term "traditional classroom situation" for the purpose of this study refers to these practices of lecturing, question and answer (both to and from the students), demonstration and student practice

with equipment.

The Significance of the Problem

The researcher for the ten years prior to this study had tutored between five and eight classes of students per year (roughly a dozen students per class) on the rudiments of making 8mm cine film concept loops. The initial exposition (which lasted about 45 minutes) was to each class by traditional classroom methods. Hence, the tutor had a repetitive situation and the repetition tended increasingly to become seeming drudgery. Further, the scheduling of times and dates for meetings convenient to both tutor snd classes was a concomitant administrative chore. It was easily seen that if a self-instructional system could be introduced to replace the traditional classroom situation, the drudgery and scheduling problem would disappear. The tutor would not have to repeat his exposition; and the class could meet at their convenience without the tutor necessarily being present. The tutor would then be free to do those other tasks which only he, as a person, could do. Mechanisation of the exposition (the initial part of the course) would result in the tutor directing his time and effort to other work that required his personal attention.

A Short Outline of Course Procedure

The course met weekly for two hours for three weeks i.e. for a total of six hours.

The first hour was expositional and was aimed to provide: (1) the basic knowledge for making cine loops; and (2) the opportunity for the

students to handle the camera, thereby to familiarise themselves with such controls as focus, manual and power zooming, the artificial/day light filter, the trigger and its safety catch. The students practised focusing, framing shots, running the film, loading and unloading the cassette, reading film footage, using the tripod, zooming i.e. the student got the 'feel' of the camera.

The second hour was spent by the students in their groups (of three students per group) putting together a shooting script. In the early minutes a topic was agreed by the members of each group. The majority of students in choosing to attend the course had probably come with a topic for a film loop in mind. So with most groups, the initial short discussion with which each group started, concerned which one of the suggested topics should be selected for production. Where two members of a group were equally anxious that his/her topic should be produced, the third member had a casting vote. If necessary, the tutor suggested that a particular topic could be selected with advantage. Occasionally, none of a group had any firm idea in mind and the tutor helped by first looking at their backgrounds and specialisms and then suggesting a topic. Since the students were in groups of like or allied specialisms, unsurmountable difficulties in the selection of a topic were never encountered.

The adoption of a selected topic was subject to the tutor's approval before the group began script writing. He proscribed the use of sophisticated or special cameras, elaborate settings and time consuming apparatus building -- they were beyond the scope of the course. Much to

the forefront was the constraint: A maximum of six hour's production time is timetabled. Hence the experience of the tutor was necessary to decide whether, or not, the suggested topic was for the group a viable photographic proposition.

After the topic had been approved, the group compiled a shooting script. During the compilation, the tutor circulated from group to group, checking the scripts as they were being written and making suggestions as seemed necessary. His main pre-occupations were (in this order): limiting the group's proposed subject matter to what seemed possible for an envisaged viewing audience to assimilate in three minutes of screening time; pointing out to the group that, at this writing (before production) stage, the tendency was to make shots of too short a duration i.e. the proposed (say) six seconds shot would require considerably longer -- such as twenty seconds -- for its message to be understood by a viewing audience; that shots should be kept simple – too-detailed or complicated 'sets' were to be avoided – otherwise the concept presented by the loop would not be grasped by the viewing audience.

In the third and fourth hours the groups dispersed to the locations where their filmings were to take place e.g. the engineering workshop, science laboratories, business machines room, catering kitchens, studio, classrooms and outside sites. Exhibits were collected and arranged; captions were made. The tutor in these periods tried to meet the problems that arose within and were special to each group's production.

These problems concerned such as shot content, lighting, special lenses and filters, simulations and animations – problems which were (in total) too numerous and too particularised to be included in the initial exposition to a whole class. After the set was complete the group made trial runs with a stopclock. Finally, when the tutor was satisfied that a trial run was reasonably proficient and also that the group felt that they were ready, the camera was loaded with film and the shooting was completed. The film was then sent for processing.

In the fifth and sixth hours the by-now processed film was (if necessary) edited. The mechanics of splicing film were demonstrated by a technician. After editing, the loop was exhibited to the class as a whole. A critical look was taken by the group, class and tutor (in that order) at the objectives as outlined in the shooting script and consideration followed as to how far the objectives had been achieved. The class therefore saw all four loops (one made by the student's own group and three made by other groups in the class).

How Much of the Procedure can be Self-instructional?

With this outline of the process of making film loops in view, it is pertinent to return to consideration of the question which initially faced the researcher. How much and which parts of the six hours of the course could be self-instructional? Probably, the easiest way of answering the question was to eliminate those parts which could not be self-instructional because the tutor was involved in making decisions for the groups. The making of these decisions by the groups themselves was

beyond the capabilities of the students i. e. the decisions were made by the tutor in the light of his experience of previous course students.

The second hour of the course was typical of the tutor's involvement with student problems. It was seen in the outline of procedure above that shooting scripts were being monitored by the tutor as the students compiled them. This was done to ensure that an unsuitable proposed shot early in the script was removed early. For to leave such removal till later may have led to the necessity for rewriting much or possibly all of the script which followed the unsuitable shot. Frequent checking by the tutor of the students' compilations as they were being made, prevented the possibility of wastage of student time at a later stage. Experience of tutoring these courses had shown the researcher that many groups (until corrected) scripted shots which were: (1) beyond the capabilities of the students in the group to film in the time available (2) undesirable shots e. g. a series of stills, shots with too much detail or too complicated, shots which necessitated such as refocusing, panning and zooming together. Before a script was put into production, it was to the group's benefit to have it approved by a tutor. The best time for this approval was whilst the script was being compiled. Only the availability of a tutor to the groups during script compilation facilitated groups proceeding at optimal paces. It seemed to the researcher that the second hour of the course could not in any way be self-instructional.

In the third and fourth hours of the course, the outline of course

procedure summarised above showed the tutor giving advice concerning specific problems as they arose within the individual group. He looked at (say) a caption which the student had just finished making and advised (such as) that the automatic light-exposure control on the camera should be over-ridden; that the surface of a proposed picture torn out of a glossy magazine should be treated – otherwise glare would be prominent; that with the apparatus as he saw it set up for filming, a proposed shot should be at least two shots with the second shot to be a close-up – otherwise, due to degradation of the image on projection, the necessary detail of the exhibited apparatus would be lost on the viewing screen. Advice on types of problems such as these, was made out of the tutor's experience. It was doubtful to the researcher whether they could be programmed. But even if they could have been, it seemed to him that it would be very much more time consuming (and possibly irritating) for the student to have to go through a programme covering many such incidents in contrast to being informed by a tutor as and when a particular problem arose. Indeed, if all possible situations requiring advice were to be programmed, then an appreciable part of the six hours of the course may have been taken by the students working the programmes. So with optimal use of the student's time to the forefront, the researcher concluded that the third and fourth hours of the course could not be self-instructional.

In hours five and six of the course, the tutor was seen above to be concerned with managing the class in appreciation and criticism of what

the four groups had produced. It would have been possible for the class to organise itself in such a procedure. However, the researcher felt that a group of twelve students, no matter how capable they were, would benefit in such a procedure if they had a tutor/organiser to lead the discussion in the light of his experience with previous classes. The researcher concluded that hours five and six of the course would be of more benefit to the students if a tutor was present rather than if the students were left to their own devices.

Therefore, of the six hours of the course, hours two to six seemed to the researcher to necessitiate the presence of a tutor. This left only the first hour as a part of the course which could possibly be self-instructive for the students.

The Subject Matter of the First Hour

In this hour the tutor presented factual information about:

(a) The use of 8mm cine concept loops:

(b) The camera and tripod:

(i) parts of the camera (ii) body and wind mechanism (iii) lens – focusing: in/out of focus (iv)grip – holding (v) trigger – shooting (vi) eyepeice – framing (vii) zoom – manual/power (viii) tripod – panning and tilting (ix) film window (x) footage indicator (xi) film speeds (xii) iris diaphragm – F numbers;

(c) Film:

(i) format (ii) cassette (iii) loading/unloading (iv) automatic exposure;

(d) Illuminating the Scene:

(i) artificial/day light control (ii) floodlighting (iii) shadows;

(e) The appearance and disappearance of objects:

(i) internal captions (ii) animation;

(f) The making of captions:

(i) types of captions (ii) A4 paper and felt pen;

(g) Filling-in a shooting script form:

(i) objective (ii) viewing audience (iii) shot serial number (iv) length of shot (v) accumulated time (vi) selection of scene (vii) avoidance of stills (viii) panning a still (ix) television news example (x) vital visual information;

(h) Excerpts from some loops made by previous classes:

(i) perspective (ii) ink mixing and matching (iii) wig on a drilling machine (iv) breathaliser test (v) colourimeter apparatus (vi) dress 1922-4 (vii) still flash (viii) connecting rods;

(i) Simplicity please message.

In addition to the tutor's exposition of the above information, the students were provided with an opportunity to practise with the camera. The researcher considered that there was nothing in the exposition that could not be programmed and further, that at (a) suitable point(s), the programme could indicate that the student should practise with the camera and afterwards return to the programme (See literature review page 21: McKeachie; 1967) The question immediately arose as to which form of programme would be most suitable.

Three Types of Programme Considered

Initially, three types of programme seemed to offer possible methods of self-instruction for the students.

(1) Paper texts with diagrams and/or still photographs and/or 35mm slides;

(2) Cine films (silent or with sound);

(3) video-taped television (only black/white was available).

Paper texts with diagrams and/or still photographs and/or 35mm slides were rejected by the researcher because he felt that the representation of movement was an essential part of the tutor's exposition (Chu & Schramm, 1967; Allen, 1967). He considered that the students would be better informed and thereby learn more quickly if they saw demonstrations of the uses of the controls of the camera and the immediate effects of moving such controls. This representation of movement was not possible with texts, photographs and slides. Such representations of movement included such as the lens moving from wide angle to telescopic views, camera shake, framing, movement of the iris diaphragm, recordings from broadcast television news and, in particular, excerpts from cine loops made by previous students on the course. If representation of movement in the programmed medium was not to be available, this deficiency in itself would be a sufficient reason to reject the medium without further consideration (See literature review on page 15).

However, if cine photography or video-tape television were used,

the above shortcoming of 'no representation of movement' immediately disappeared.

Colour Cinefilm versus Black/white Television video-tape

The disadvantage of the use of television in this projected replacement of the tutor by a self-instructional programme was that only black/white television was available. Colour was an essential factor in the subject matter of the tutor's exposition. For example, demonstration of photographic information about artificial lighting (colour temperature) was impossible without colour recording. Reference was made in the exposition to the different colours of the two sides of unexposed film. Coloured diagrams showing the working of automatic exposure control, the reflex system of viewing and film format would suffer noticeable depreciation of clarity from being merely in black and white and shades of grey. Oil paintings (in colour) needed to be reproduced. In general, the non-use of colour in the exposition, would have denied to the students much illustrative information.

It could only be concluded that in the absence of colour video, colour cinefilm was the only medium available which could fulfill the criteria required for recording the exposition of the tutor.

16mm versus 8mm Cinefilm

Since the students were to view the exposition in groups of (ideally) three or at the most twelve students per viewing, the maximal size of the screen image need not be greater than 36 inches wide by 27 inches deep. Up to this size, super 8mm film gives a reasonably acceptable image.

16mm cinefilm at this size gives a much brighter image but its financial cost per unit time of projection is two and a half times the cost of super 8mm film (Kodak 1978 prices). To keep production costs to a minimum, 8mm film was to be used.

The Statement of the Problem

The use of cine film to replace the traditional classroom situation immediately posed the problem as to whether in this context of teaching student lecturers to make 8mm film loops, the cine film was as effective a teaching method as the classroom teacher. On the other hand, it was also seen that there was a possibility that the film may in the event prove to be even more effective than the teacher. The problem was stated in simple terms by asking the question:

> Is exposition by cine film (in the context of teaching student lecturers to make cine loops) more, or less, effective as a teaching method than the traditional classroom situation?

A review of the relevant literature seemed indicated and it was undertaken to establish if previous research could shed any light on the solution of the problem.

A REVIEW OF THE LITERATURE

It will have been seen that the constraints inherent within the practical situation had led to three major decisions: (1) it was desirable to replace the tutor's exposition by some sort of quasi self-instructional situation (2) of three possible media considered, the profferings of cine film seemed best fitted to the existing situation (3) 8mm (as distinct from 16mm) film was adequate for this situation.

These decisions, in turn, raised four other questions: (a) in the choice of a medium (cinefilm as distinct from (i) paper texts and/or photographs and/or slides (ii) television) had any other researchers in similar situations arrived at the same or different conclusions? (b) Was there any evidence available to show that students did learn from cine films? (c) Was there already on the commercial market a cine film available that would teach the rudiments of cine loop making? (d) Is the use of 8mm film very much cheaper than the use of 16mm film?

The Effectiveness of Paper texts, Cinefilm and Television as Methods of Instruction

W. H. Allen (1967) in a review of the past, present and future of instructional media looked back over the researches he had conducted for many years (in particular for the United States Department of Health, Education and Welfare) and attempted to summarise his findings in tabloid form. The large area of learning objectives he sub-divided into: (1) learning (a) factual information (b) visual identifications (c) principles, concepts and rules (d) procedures; (2) performing skilled perceptual/motor acts; (3) developing desirable attitudes, opinions and

motivations. With these particularised objectives in view, he then considered in turn the teaching effectiveness of still pictures (photographs and slides), motion pictures, television, programmed instruction (paper texts), oral presentations, audio recordings and demonstrations (ibid page 45). Of these media of instruction, he rated motion pictures as the medium of highest overall effectiveness. This finding is now a dozen years old; with the improvement in recent years of instructional television (particularly as colour screens are now rapidly replacing black/white) the finding may no longer be as true as it seemed to be when it was announced. However, it was particularly relevant to the present study as the researcher had only black/white television available.

Further, in comparison of 8mm silent loops with other instructional equipment, W. H. Allen (1967) also made a comparison in terms of (a) material production considerations (b) the availability of facilities and equipment, and (c) the costs of playback facilities (page 20). He found that it was somewhat easier for teachers to make 8mm film loops than television videotapes which ordinarily required the services of a technician to monitor the working of the equipment; that 8mm projectors were more readily accessible in educational institutions than were video playback facilities; and that the initial and playback costs were much lower for 8mm films than for television tapes.

T. Smith (1972) has compared the effectiveness of two methods of presentation of (1) slides and (2) cine film as aids to the learning of a simple manipulative laboratory skill. The results show that the mean

learning time for students who saw the film loop was about one third of the mean learning time for students who used the tape/slide synchronisation method of presentation. Further students learning from the cine loops experienced in the practical situation less difficulty in anticipating the next manipulative movement and had more fluent movements than those students who did not see the film loop.

In view of the above, it seemed to the researcher that the choice of 8mm colour film had been correctly made.

Do Students Learn Effectively from Cinefilm?

Since about 1970, a main concern within research on the ~~use~~ of instructional films seems to have centred around the problem of how effective the use of such films as a teaching medium can be. For example, J.M. Foy & J.R. Currie (1973) have examined the contention (which they think, may be held by many university lecturers) that the learning resulting from instruction by cine film is minimal. They then compared the relevant learning of a group of pharmacology students who were shown seven instructional cinefilms with a comparable group who did not see the films and instead attended a normal lecture situation. The findings of a post-test showed that the students who had seen the films scored significantly higher ($p < .05$) than the students who had not seen the films.

B.D. Pearson (1972) made a study of the problem of nursing students reporting inferences as observations. Instructional film was used to teach the students how to distinguish observations from

inferences. She then tested to establish if nurses who received film instruction reported differently from a control group of nurses who had not had the instruction. The test involved searching the nurses' reports for: (a) more or fewer observations reported (b) more or fewer inferences as observations reported (c) observations as the majority of the items reported. The subjects totalled 129 and were randomly assigned to instructors in groups of 43 to three comparable, experimental, instructional situations. Two experimental groups viewed (1) an instructional film (2) a preparatory film and (3) a test film. A third control group viewed only the preparatory film and the test film. The study found that there was no significant difference between the groups who watched the instructional film but that both these groups scored higher than the control group who did not see the instructional film.

G. C. Chu & W. Schramm (1967) made a literature search into the use of teaching aids. They considered evidence from published experiments in six areas. Two of these areas are pertinent to the present study. They concern: (a) How much pupils learn from instructional television (ibid page 1 onwards) and (b) how effectively learning from television is, compared with learning from other media – in particular, from cine film (ibid page 156). They found that the use in instruction of moving images was superior to still images for teaching skills where continuity of action was an element in the skill. They also found that there was little difference between learning from television and learning from cinefilm if the two media were used in the same way. Their

TABLE 1

The Effectiveness of Media in Terms of Learning Objectives (From W.H.Allen, 1967)

MEDIA	LEARNING OBJECTIVES					
	Learning factual information	Learning visual information	Learning principles, concepts and rules	Learning procedures	Performing skilled perceptual/ motor/acts	Developing desirable attitudes, opinions and motivations
Still pictures	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	LOW
Motion pictures	MEDIUM	HIGH	HIGH	HIGH	MEDIUM	MEDIUM
Television	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW	MEDIUM
Programmed instruction	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM
Printed textbooks	MEDIUM	LOW	MEDIUM	MEDIUM	LOW	MEDIUM
Oral presentations	MEDIUM	LOW	MEDIUM	MEDIUM	LOW	MEDIUM
Audio recordings	MEDIUM	LOW	LOW	MEDIUM	LOW	MEDIUM
Demonstrations	LOW	MEDIUM	LOW	HIGH	MEDIUM	MEDIUM

8mm Colour (silent) Cinefilm Compared to Television Video Recordings
(From: W.H.Allen, 1967)

Instrument	Media used	Materials, production considerations	Availability of facilities and equipment	Equipment cost
Motion picture projections as repetitive 8mm loop; silent) to individuals	8mm motion picture film (silent)	Special production normally necessary. May be produced as 16mm film alone or locally at low cost in short time	Not normally available. Will need to be specially procured to meet requirements of instructional programme	low per unit; but moderate for groups
Television (closed circuit)	Live presentations. Motion picture film. Videotape recordings. Still pictures	Normally requires skilled production staff	Not normally available	moderate to high

statement on the effectiveness of television instruction supports the view that students do learn substantially from such instruction. They found that this effectiveness "...has been demonstrated in well over 100 experiments...at every level from pre-school through adult education and with a great variety of subject matter and method..." (ibid page 1). They also found that "...the use of visual images will improve learning of manual tasks..." (ibid page 162). Such a finding had obvious implications in the present study where students were to learn to manipulate cine cameras.

W. J. McKeachie (1967) in a review of film research in higher education found that participation by the students as they watched a film increased learning and he suggested that media presentations should make provision for such participation whenever possible. The present researcher found useful application for this suggestion when he was planning the present study. Whilst he considered that student participation during the screening of his film was not a viable proposition, in the scripting of the film he included a midway break so that students could familiarise themselves with equipment to be found on the desk before them i.e. the screen directed the students (1) to switch off the projector (2) to examine the relevant apparatus and, (3) when they were ready to proceed, to switch the projector on again. McKeachie (ibid) also found that of students who had little prior knowledge of the subject matter to be taught, those students with previous experience of instructional films learned more from them, than those students

without such experience.

D. Gliessman & R. C. Pugh (1976) aimed to increase the probability that taught concepts in teacher education would become functional by the employment of what they term 'protocol' films – the term is derived from the social sciences. They made in total 10 films; three films taught six concepts; six 'pattern' films were interpretive of the concepts; and a test film presented 30 behavioural vignettes that were to be categorised in terms of concepts. The films were used by 14 instructors and 294 students. The users' responses to questionnaires regarding the suitability of the films as teaching instruments were in the main approving. They found "...the instructional use of films led to increased skill in categorising classroom behaviour in terms of a specified set of concepts..." (ibid page 46) and that "...motion picture, in its capacity to fully portray the verbal and nonverbal components of behaviour, can well serve as a central component in instruction rather than merely as an instructional aid..." (ibid page 47)

R. L. Campeau (1974) undertook an extensive literature review with the aim of summarising the findings from experimental studies that had assessed the instructional effectiveness of the various audio visual media for the teaching of adults. Thereby, he hoped to obtain evidence that would assist in deciding which media were the most appropriate for specific learning tasks. Seven criteria for inclusion in the review were laid down by him. (1) Recency of the experiments – 1966-71 were the years considered (2) Completeness – no abstracts of studies were

accepted (3) availability – all studies must have been published (4) sample size – not less than 25 subjects in each of the experimental and the control groups (5) treatment – not less than one hour (6) measures of media effectiveness were assessed from scores on objective achievement tests (7) the study must have described the statistical techniques used to analyse data (accepted $p \geq .05$)

Of the cinefilm research that he examined, he reports that no experimental studies were found which met all the above criteria, so they were excluded from his review. But he makes the point about instructional television that "...many reviews of literally hundreds of comparative effectiveness studies concluded that, in general, no specific differences were found... compared to face-to-face instruction..." (ibid page 20).

J. C. Reid & D. W. MacLennan (1967) found similarly and state that instruction by both television and by cinefilm when compared to instruction in the lecture room, in experiments they had conducted, gave a result of no significant difference.

J. M. Foy & G. D. H. Leach (1969) in their study stress the importance that they attach to the use of 8mm filmloops as aids to learning. They found that where it is "...desirable for students to carry out experimental procedures in a logical sequence. Films have been found to be particularly helpful in this respect..." (ibid page 290). They also point out how at least one major shortcoming of demonstration can be overcome by the use of film. "Even when there is one viewer per

demonstration, it is often difficult to point out fine detail and this becomes impossible with larger groups. Even when the smaller screen of the back projector is used, larger than life size pictures can be presented in daylight and, unlike a live demonstration, repeated ad libitum without fatiguing the demonstrator." (ibid page 289). They point out that some procedures require the use of particularly expensive apparatus which can be used in turn by students. A film loop projector placed beside the apparatus can be successfully used to instruct the students. Finally, they found that student attitudes were favourably disposed to the use of cinefilm in practical classes and that "...the instructional efficiency (as judged by the experimental work performed) of film versus demonstrator instructed groups is strictly comparable." (ibid page 24).

These findings coupled with the finding of G.C.Chu and W.Schramm (1967) that there is little difference between learning from television and learning from cinefilm, promotes the composite conclusion that cinefilm is an effective teaching medium.

Was a Cinefilm Available that could be used to Teach the Rudiments of Film Loop Making?

B.Coe (1962) had tackled the problem of making a (16mm) cinefilm that taught some of the elementary knowledge necessary for making 8mm cinefilms. His aim was to instruct amateur cine enthusiasts. The resulting film, as far as it achieved this aim, was factual and for its projected audience seemed to be both interesting and entertaining. The planning of the film had started with the assumption that the audience

would already know the function of the controls of their cameras before seeing the film. With this assumption as a starting point, the film example's some of the uses of the controls. However, from the researcher's point of view, the screening time of 21 minutes was considerably longer than his classes had available for the learning of this subject matter. Further, the content of the film was chosen to appeal to the amateur cine enthusiast. So the settings were social scenes, castles, sunbathing beaches and the like. The researcher was looking for content based pertinently in educational situations. But moreso, the content of the Coe film dealt with only about a quarter of the subject matter of what the researcher wished to cover. Little was shown of faults to be avoided, insufficient about film gauge and format, and nothing at all about caption making and script writing. So whilst the researcher felt that every amateur cine-enthusiast might view the Coe film with profit, he also felt that it had too many shortcomings to use it as a sole source of exposition for students intending to make cineloops.

Other films "Film making Fundamentals" (1972), "Frame by Frame" (1975), and "Film Graphics" (1973) would all be useful background viewing matter but inadequate for replacing the lecturer's exposition of the Garnet Course.

Somewhat nearer in didacticism to what the researcher wanted in treatment of subject matter was found in sets of 35mm slides and printed commentaries on elementary photography (Kodak, 1965 and P.I.R.A., 1975 are examples). The Kodak slides were aimed at a

serious amateur public. The PIRA slides were produced for the training of employees in the printing trades. However, both sets of slides were restricted to information about still photography – which is useful for – but does not provide adequate subject matter for the making of film loops.

The Relative Costs of 16mm and Super 8mm Films

J.F. Gunter (1976) lists (page 72) the relative costs of raw film and its processing only as he found them in U.S.A. in 1976 i.e. the costs exclude the hire of equipment and cameraman which would be much greater for 16mm than for 8mm.

The Cost of 10 minutes of Film (U.S. dollars)

	Raw Film	Processing	Work Print	TOTAL
16mm	44	32	44	120
Super 8mm	16.8	12	22	50.8

In the United Kingdom in December, 1978 the prints with sound track of 16mm film is estimated to be £43 and for super 8mm film (magnetic sound) £16 Sterling. It will be seen that in both cases the cost of 16mm film is roughly two and a half times the cost of 8mm film.

Like J.F. Gunter (1976) this investigator concludes that Super 8mm is "...economical...versatile...easy to operate...and flexible." (ibid page 75).

Conclusions from the Literature Review Pertinent to the Present Study

Possibly the most directly applicable data to the problem of the

present study (Can a programme be designed to replace the exposition of a personal tutor in the making of filmloops by students?) was W.H. Allen's (1967) listing of instructional media in terms of six learning objectives: (1) factual information (2) visual identification (3) principles, concepts and rules (4) procedures (5) skilled/perceptual or motor acts (6) attitudes, opinions and motivations (page 16). He found that motion pictures compared to still pictures produce more learning of principles, concepts and rules and also develop to a greater extent desirable attitudes, opinions and motivations. When he compared motion pictures to television, the former as a medium of instruction was found to be superior in teaching visual identifications and skilled/perceptual motor acts. His listings show motion pictures as the most successful of the media in achieving student learning. Further, in terms of: (1) materials and production considerations (2) availability of facilities and (3) cost of equipment, he found that compared to television, 8mm cinefilm was more readily available within educational institutions.

J. M. Foy and J. R. Currie's (1973) finding that cinefilm does teach very effectively is shared by all the researchers within the present review. In particular, G. C. Chu and W. Schramm (1967) refer to "...well over 100 experiments...at every level..." which demonstrate that television does teach effectively and also that where television and cinefilm are used in the same way, the amounts of student learning that result are not of significant difference. B. D. Pearson (1972) found that the use of visual images improved the learning of manipulative tasks

(in nursing); such a finding may well be applicable to teaching students how to use photographic cameras. W. J. McKeachie (1967) further found in higher education that participation by students resulted in increased learning; in planning such as a cinefilm, provision may well be be made for such participation.

In conclusion, the review of the literature had confirmed the original decisions of the researcher – that it seemed to be a viable proposition:

(1) To use some sort of programme to replace the lecturer's exposition;

(2) Of three types of programmes that might be used effectively (text plus photographs or slides; black/white video taped television; colour cinefilm) the last – cinefilm – seemed to be most suitable.

(3) Super 8mm (as distinct from 16mm) colour film should be adequate to meet the needs of the viewing group.

Consequently a cinefilm was made in 1976 and was first used by students in January, 1977. The film covers exactly the subject matter of the tutor's exposition as outlined (pages 9 & 10).

The Content of the Expository Cinefilm

The importance of ensuring that the material content of the expository film was suitable was obviously of prime importance as is illustrated by Allen's (1969) study. He had conducted an experiment with 477 sixth grade science students arranged in thirteen groups to test among other factors, the effectiveness of the cinefilm being used.

Later, he found that "... an additional group that received a non-experimental version of the film learned as much as any of the other groups in half the time." (The researcher's underlining).

It was also important to have in view that "... interest in, or attention to, instructional materials involves a sustained relation between the person and the material (or information)." (Mitchell, 1978, page 1). In the expository film, the presented subject matter obviously came from the scheme of work for the course. However, in the planning (scripting) of the film, it was found possible to make provision for this relationship by presenting shots which, it was thought, would be of interest to adult students in educational institutions.

The Constraints Inherent Within the Expository Cinefilm

In the making of the cine film titled "The Making of Film Loops (for Teachers)" a number of constraints were imposed for the benefit of the students.

First, the length of the film does not extend beyond the normal lecture duration of the traditional classroom situation it replaces; a duration of thirty five minutes seemed to be about right.

Secondly, the film does not embody (with one exception - see below) any filmic techniques that cannot be used by the students in the making of their own loops. This constraint obviates the undesirability of students seeing in the expository film, techniques which are beyond their abilities to copy i.e. techniques which are beyond the scope of the course. So the use of (for example) visual verbal superimposition

is excluded in the expository film; in its place appears merely the insertion of verbal captions (e.g. the caption "wide angle" is inserted at the midpoint of the respective shot). Fades-in and -out were excluded – cuts only were used. There are no lap-dissolves in the film.

Summarily, in the making of the expository film, the practice was to use only those techniques which the students could employ in the making of their own loops. However, one major exception was made to this general principle. The exception is the use of sound track for commenting upon the visual. The researcher felt that a cine film of duration of thirtyfive minutes which was silent, would not be making adequate use of the teaching opportunity available. So a sound track was incorporated.

METHODOLOGY

Introduction

It has been seen that the original problem (Could a tutor's exposition on the rudiments of making 8mm filmloops be programmed?) (page 3) had been narrowed after consideration of the subject matter of the exposition by the acceptance of three criteria governing the choice of a medium (page 11 onwards). These criteria were:

(1) The medium must be capable of representing motion (page 11)

(2) " " " " " " " colour (page 12)

(3) The duration of the application of the medium must approximately accord the duration of the tutor's exposition (about 45 minutes) (page 29).

As a result, a cinefilm had been chosen as the medium. It has also been seen that the literature reviewed supported the contention that students do learn from cine film instruction (page 17) and the choice of a cinefilm as a medium of exposition seemed appropriate (page 16).

The Statement of the Evaluation Question

The problem as originally stated (Could the exposition be self-instructional?) was therefore now transformed to: Would this exposition by cinefilm in the context of teaching student lecturers to make film loops be found to be as efficient as the tutor in the traditional classroom situation.

Of course, it was also seen that it may prove to be more efficient. So for the purposes of this study, the problem was re-stated to yield

the following:

At a theoretical level of discourse:

Can the initial exposition of a course on the making of filmloops be automated with no detrimental effect to the students? (i.e. can the exposition of the initial lecture be suitably replaced by a cinefilm?)

At an operational level, the problem and evaluation question is clearly stated:

Can student lecturers at Garnett College, London, learn to make 8mm filmloops as effectively, when the initial exposition of the subject matter is by the cinefilm "The Making of Concept Loops (for Teachers)," as when the exposition is by a tutor in the traditional classroom situation?

Rationale for the Evaluation Question

A cursory view of any simple expository situation suggests that a tutor's exposition can be cine filmed and the recording can be used to replace the tutor's exposition on future occasions. However, practice reveals at least two major shortcomings. First, the original three dimensional scene is represented in cine film by a two dimensional image i.e. solid objects become represented by flat photographic images. Secondly, this two dimensional representation is inferior to the original scene in photographic definition i.e. the detail available in the original scene is reduced in the photographic represent-

ation – cine film compared to the human eye is insensitive. Against these two shortcomings must be balanced the advantage afforded by selective sitings of the camera. The camera is a privileged observer taking positions which no student in the traditional classroom occupies. The camera can "see" from many angles: it can move nearer to, or away from, the exhibits; it can magnify, or reduce, the size of the original in the photographic representation; the technique of time lapse is also available in animation. (Other techniques were excluded on the Garnett courses as beyond the scope of the course.).

Therefore, it may be that the loss of quality in cinefilm representations is more than compensated by the 'pride of place' views afforded by selective sitings of the camera.

Definitions of the Variables

With the purpose of the study (a comparison of the effectiveness of teaching by (1) the traditional situation and (2) by cinefilm) clearly in view, the variables were defined.

The independent variable is: Instruction in the traditional classroom situation versus instruction by cinefilm.

The dependent variable comprises the quality of students' films produced following each of the methods of instruction.

The problem now, was how to measure the quality of the students' films.

Measurement of the Dependent Variable

Pre- and post-test questionnaires were considered – and rejected. They were rejected because the researcher wished to avoid telling the students that a study was being made, in order to preclude a possible reactive effect (Tuckman/Brown, 1972, p. 49). Indeed, during the whole of the study, as it was eventually made, the students had all the appearances of being unaware that a study was being made. Further, another reason for rejecting questionnaires was that the study was started in July, 1976 and by then half of the students included in the study had already completed their course: so tests for them were not possible.

The researcher felt that the best way of measuring the amounts of learning that accrued from the two methods of instruction was by comparing the marks awarded for the filmloops that the groups had made on the course. In other words, after the initial exposition, the groups made three-minute loops. These loops were assessed by members of staff of the College. It is these assessments which were used in the study as measurements of student learning. Up to December 1976 all loops made by the students had resulted from exposition taking place in the traditional classrooom situation. From January, 1977 the loops resulted from exposition made by the cine film "The Making of Film Loop (for Teachers)." So comparable groups of students were selected i.e. the assessment marks awarded for students' loops made between January and June, 1976 (resulting from traditional classroom exposition) have been compared with the

assessment marks awarded to students' loops made between January and June, 1977 (resulting from cinefilm exposition).

The Shortcoming of the Comparison by Assessment Marks

A possible disadvantage of this method of comparison is that no accurate measure of the amounts of student learnings on the course was being made. For the method is based on an assumption and (need it be said?) that all assumptions have inherent dangers! In this study, one danger is the assumption that both years of students started with equal amounts of knowledge of the subject matter that was being taught. Certainly it seemed that some of the students coming on the course had never handled a cine camera before. But a few students were obviously somewhat knowledgeable - they had their own cameras or access to cameras within the colleges where they lectured. In general, some students coming on the course already had various amounts of knowledge of the subject matter of the exposition. Such pre-knowledge would with some students result in higher scores at the end of the course. However, starting knowledges resulting in higher score would not affect the comparison being made provided the assumption was correct: That the composite of the starting capabilities of the students for each year of the comparison was virtually the same. Where the total number of students involved in the comparison is small, the inherent danger of being wrong in the assumption is correspondingly large. Conversely, where the number of students is large, the chance

of being wrong in the assumption tends towards zero. In this study, the total number of students involved was 153 i.e. 72 students in 1976 and 81 students in 1977. With such a number and with no systematic bias in selection of the groups, the chance of being wrong appeared to be so small that it could be ignored. (Indeed, the researcher in the ten years prior to the study, whilst tutoring such courses, had felt that the starting capability of students had not differed noticeably from year to year).

The Operational Restatement of the Evaluation Question

In operational terms, the evaluation question now became: Students make 8mm filmloops no less and no more effectively when the initial exposition is by cine film than when such student lecturers were taught in the traditional classroom situation and when the measures of the effectiveness of each method of exposition are the assessment marks awarded to the students of the two groups (traditional classroom situation group and cine film group) for the cine loops that the students make after the expositions.

In other words, if the above proposition is true, then the marks awarded to the students taught in the traditional classroom situation will not be significantly different from the marks awarded to students taught by cine film. On the other hand, if the proposition is untrue, then the marks awarded to the students in the traditional classroom situation will be significantly different from the marks awarded to

students taught by cinefilm.

The Design of the Study

The design structure of the study is basically one of the so-called true experimental designs often called "the post-test-only control group design" (Tuckman, 1976, p. 106). The exigencies of course organisation forced the researcher to accept a constraint on the basic design. Randomisation of the students was not possible but sample bias was controlled by accepting an intact group of 72 students of 1976 as constituting a control group and the 81 students of 1977 as the experiemental group. These students were on the same course (merely a year apart) and at the same stage of the course. There was no reason to suppose that this grouping could significantly affect the results in any adverse way.

The design is schematically represented:

$$\begin{array}{lll} R_1 & X_1 & O_1 \\ R_2 & X_2 & O_2 \end{array}$$

where R_1 represents the 72 students of the year 1976; and R_2 the 81 students of 1977. X_1 represents exposition in the traditional classroom situation and X_2 exposition by cinefilm. O_1 and O_2 are the assessments of the students loops.

PROCEDURES AND RESULTS

It has been seen that: (1) a decision was made to replace the tutor's exposition by a super 8mm cinefilm screening for 35 minutes (page 12); and (2) that the subject matter of the cinefilm needed to be scripted and presented with great care (page 28).

The subject matter of the researcher's cinefilm was the same as the subject matter of the tutor's former presentation in the classroom situation i.e. it was taken from the scheme of work for the course.

However, the cinefilm (with its availability of representation of movement) occasionally in the presentation of subject matter, proffered some possible enhancement. For example, the tutor in illustration of his explanations of 'reflex viewing' and of 'automatic exposure' had shown wall diagrams. In the film these explanations seemed to be the clearer when a smaller diagram with movable parts was presented. The topic of the use of artificial lighting to illuminate the scene was possibly more easily assimilated by the students watching the film than by their predecessors watching a demonstration at desks in the traditional classroom. In the demonstration of the making of captions, most of the students (twelve per class) probably had on the screen a better view of the procedure than previous students who in the classroom had vied with one another for the best viewing position around a small table.

The Contents of the Expository Film

The film opens with a shot of a teacher using an 8mm filmloop

in a daylight back-projector. This opening was chosen to illustrate the use of 8mm loops in a classroom. The scene then changes: (1) to a college library to example some of the loops available on loan; (2) to outside the library where students in groups of three (with camera, tripod and film) are making loops; (3) to other areas of the college (engineering workshop, visual aids room, typing room, and science laboratory) where similar groups of students are also making loops. The objective of these shots is to identify the topic visually.

Then the 'tools' (camera, tripod and film) of film-making with their respective internal captions appear at one second intervals. The introduction of these tools is the primary objective of the shot. But an important secondary objective concerns the mode of presentation. Interval presentation was chosen in order to prepare for a later flash-back that would let the students see how easy it is for the film-maker to have objects appear in or disappear from his set whenever he wishes.

Next, the parts of the camera (body, lens, grip, trigger, trigger-lock, eyepiece) – and their effects when they are moved or used – are screened with appropriate following shots illustrating in/out of focus; power/manual zooming; the directive: focus only at maximal telephoto; the use of the tripod to avoid camera shake; wide angle/telescopic views; panning; and tilting.

The screen at this point directs the students to switch off the projector and with the cameras and tripods (at hand on the bench nearby) to locate the controls thay have seen in the expository film and to

practise using them.

The students switched on the projector again after (researcher's estimated times of) between five and ten minute breaks.

The cinefilm re-opened with some details about super 8mm film: colours; format; why it is called 'super' and '8mm;' length in feet and in projection time; the container cassette; how to load/unload the cassette into/out of the camera; type of film; camera window; footage indicator; film advance speeds; under/over exposure; automatic exposure; iris diaphragm; F numbers; why the camera is called 'single lens reflex.'

After this, Illuminating the Scene was considered: filming in daylight; colour temperature; artificial lightings – principal light and fill-in lights; the relief of shadows.

The Appearance and Disappearance of Objects within the set followed with the special objective of showing how internal captions could be used to advantage. A flash-back to an earlier shot in the film (camera, tripod and film shot) showed how the set could be built up. The necessity for total stillness of all items in the set, other than the inserted/extracted item, and also rigidity of the camera was stressed. This led to chalkboard and plastic-sheet demonstrations; and the using of a cable-release to operate the trigger of the camera.

Caption Making is an important accessory subject area to cineloop filming by teachers. So examples were shown of machine printed captions, plastic letters, paper models, chalkboard captions and suitable posters. But the most important topic of this area was a

demonstration of making captions quickly using A4 paper and feltpens.

Filling in a Shooting Script Form was probably the most difficult section of the expository film to plan. Shots exampling 'the stating of objectives' of the cineloop and 'defining the target population' were followed by a panning of the form's headings: shot number, length of shot in seconds, accumulated time, camera usage and lastly, the scene to be recorded.

Then attention was focused on the type of material suitable for a cineloop. The avoidance of still pictures was stressed; the panning of a still picture was demonstrated; shots with adequate movement were exampled; an excerpt from television "news" was recorded. The final caption read: VITAL VISUAL INFORMATION ONLY.

Lastly, excerpts from some loops made by students in the researcher's previous classes were screened to illustrate mainly common faults made by students on the course.

The first of these excerpts was titled 'Perspective.' Unlike the others, it was included: (1) as an illustration of black/white photography (2) as an illustration of the use of a series of drawings (3) as an example of "sandwiched" information (4) as an example of the use of a close-up lens on the camera; the use of typed information (5) for its interest to teachers of art.

A second excerpt on 'Ink Mixing and Matching' was included as an example of: (1) both good and indifferent panning (2) the use of colour (3) good framing of shots (vital visual information only) (4) suitable editing (5) its appeal to teachers of printing.

An excerpt from 'Safety in the Workshop' showed the necessity for long-haired machinists in engineering workshops to wear hairnets. A wig is seen turning on a drilling machine spindle whilst a hairless operator falls to the floor. It was included for: (1) its interest arousing treatment of a serious topic (2) its humourous approach (3) its workshop setting (4) the wider application of the topic e.g. safety of long-haired people in the home using mixing machines and electric drills (5) the use of fill-in lighting to supplement daylight (6) its appeal to engineers.

'The Breathaliser Test' is (in the researcher's opinion) probably the excerpt that teaches students the most photographically. The planning of the loop was sound: A policeman would come out of the shadow of trees overhanging a footpath and apprehend the driver of a car that was travelling erratically. At the right moment a whisky bottle would be seen in the driver's pocket and he would be given a breathaliser test. Unfortunately, in the shooting, the camera work proved to be too involved for the group making the loop. So this excerpt illustrates well: (1) excellent choice of topic (2) thoughtful selection of shots (3) faulty focusing of the lens (forgetting to focus and non-compliance with the directive to focus at maximal telephoto) (4) too-complicated camera work - zooming and distance re-setting at the same time (5) its appeal to lawyers and the police in particular, and to the car-drivers of the public generally.

'The Colourimeter' extract was included to illustrate: (1) the selection of a suitable topic for three minutes of loopfilm (2) the use

of colour (3) the use of many A4 paper captions (4) the intermingling of close-ups and wider views (5) the glare from the white base of the instrument (6) the use of contrasting red and green inks in graphs (7) its appeal to chemists and other laboratory workers.

The excerpt 'Dress 1922-24' illustrates well: (1) how initially to arouse attention (move from interesting detail to a wider context) (2) good panning and tilting (3) movement from a wider context to detail (4) inappropriate flash from a still camera (5) appeal to ladies generally and to the clothing trade in particular.

The last extract shows road engines and illustrates: (1) high definition results from shooting in hazy sunshine (2) plenty of movement from stationary equipment (3) use of contrasting subject matter (modern and obselescent connecting rods) (4) appeal is to automobile mechanics and engineers.

It will be recalled that this film of the exposition opened with a classroom situation in which a lecturer was using a concept loop to instruct the class. The film closes with the same lecturer tutoring a group of students who are at the planning stage of making such a loop. The final caption reads: SIMPLICITY PLEASE.

The Subjects of the Study

The student lecturers who participated in the study were all attending Garnett College of Education, London, U.K. and reading for a Certificate of Education in Further and Higher Education. For the

purpose of this study. two groups were selected. One group consisted of 72 students who were at the College in the spring and summer terms of 1976 i.e. between 1st January and 31st May, 1976 were the selected dates. The other group consisted of 81 students who were at the College in the spring and summer terms of 1977 i.e. between 1st January and 31st May, 1977. These periods were selected so as to compare students who were at similar stages of their year's course within the College. Neither group was pre-selected and both were intact groups.

The Procedure

In 1976, the students, in groups of approximately twelve students per group, attended a traditional classroom situation in which the following subject matter was discussed by the tutor for about 45 minutes (of which possibly ten minutes was spent by the students practising with the camera).

> The camera controls, the use of the camera and tripod, some factual information about film, the illumination of the scene, the filling-in of a shooting script form, and some examples of common faults made by previous students.

In 1977, the students, in groups of approximately twelve students per group, attended the screening of a cinefilm titled "The Making of Film Loops (for Teachers)" which covers the same subject matter as that which the tutor had covered in 1976. The screening time was 35 minutes.

The students, following the direction from the screen, stopped the projection of the film midway and practised with the cameras and tripods left on a table nearby, until they felt familiar enough with the equipment and ready to start the projection of the film again. The researcher estimated that the film was stopped for between five and ten minutes; the duration varied with the different classes. The tutor was available in this break if he was wanted.

After the exposition, by either the traditional classroom situation or by cinefilm, all students (i.e. both 1976 and 1977 students) for the remaining five hours of the course followed the same procedure: the students were divided into groups of three students per group of like or of allied specialisms. The three members of each group then decided on a topic for their loop, put together a shooting script, made captions and exhibits where necessary and shot three minutes of film. After processing, the film was edited, if time allowed. The loop was then shown to the class and finally given to the course tutor for assessment.

The Assessments of the Loops

Each loop (in each year) was assessed by the researcher (who was the course tutor and is an educational technologist) in liason with another College tutor (not an educational technologist but one of a number of specialists knowledgeable in the particular subject matters of the loops). The two tutors for each assessment agreed on a global mark

(called in the results here an AGGREGATE mark) out of a maximum of twenty possible marks.

Four Considerations

The educational technologist in arriving at his global (aggregate) mark did so after awarding a maximum of five possible marks for each of four areal considerations. These considerations centred around and included the points listed below. The lists are not comprehensive, nor can they be so. In practice, each loop is found to have merits and detractions of its own; but it is felt to be possible to indicate some central common areas of consideration which appertain to many loops.

CONSIDERATION ONE - SUITABILITY - concerned the pertinence of the chosen topic for a film loop and the usefulness of the particular shooting script in the making of the loop. The assessor asked himself such questions as: Was the loop didactic or merely entertainment? Were the shots within the loop portraying movement or were they merely stills? Were the underlying concepts adequately expressed by concrete examples? Were the shots as listed in the shooting script in logical sequence and suitably selected?

CONSIDERATION TWO - AIDS and CAPTIONS - centred around the selection of apparatus and of the appropriateness of the captions. Were the aids made for the loop adequate? Was the apparatus selected suitable for filming? What, if any, use had been made of simulation? Were the captions suitable in format, in wording, in number? Were

the internal captions of a suitable size?

CONSIDERATION THREE - CAMERA USE - concerned the students' use of the camera and tripod. Were the framing of the shots, the focusing and movements of the camera adequate? What use, if any, was made of animation? Was the illumination of the scene reasonable? Were all camera controls correctly set?

CONSIDERATION FOUR - USABILITY - centred on how much of the loop was usable in the classroom. The concern was with such as shots being too long in duration or including unnecessary material or detail. Is it the assessor's opinion that the loop will effectively teach what it sets out to teach? Has the editing been thorough? In general, the assessor queried: How wisely has the raw film been used?

The AGGREGATE MARK of the educational technologist is the simple addition of the marks awarded under the considerations One to Four.

The other tutors, who were specialists in the subject matters of the loops seemed to assess from two bases: (1) How useful would the loop prove to be in the teaching of the subject matter? (2) Did the assessment mark of the loop accord equitably with the assessment marks of other students who had chosen options other than making film loops (e.g. writing an essay)?

The Reliability of the Assessments

If the two tutors had disagreed about an assessment mark to be awarded, appeal to a third authority (through the Senior Tutor of the

College) was available. No such appeal was made over any of the loops assessed in this study. The researcher concluded, therefore, that the assessment marks were reliable for both years of students.

The tutor to both the 1976 and 1977 courses was the researcher; this gives rise to the possibility that he may have had a built-in bias – he may have had a favourable (or unfavourable) disposition towards the cinefilm which replaced his personal exposition. But several factors militate against (and none have been found in favour of) acceptance of such a view.

Bias in assessment of the students' loops in 1976 was impossible; for the assessments were completed before this study was begun. In 1977, the 27 loops made, cover a dozen different specialisms. Even if the researcher's assessments were incorrect, it is unlikely that another dozen College tutors (who were not aware that the study was being made) were also equally incorrect in their assessments. Further, a randomly selected 10% of all students' work within the College (which students were selected is not known to the researcher) was collected at the end of each of the academic years for moderation at the Institute of Education of the University of London. No adverse comments on assessments of the film loops was received for either group. In conclusion, no evidence has been found that the assessments of the 1976 and 1977 loops differed in any way.

Using the Cinefilm "The Making of Film Loops (for Teachers)"

The students were given the handout (Appendix 2) which states the objective and outlines the procedure on the course, and includes all the necessary instructions. No other procedural information was found to be necessary. Shooting script blank forms (Appendix 3), for the use by the students for the compilations of their scripts, were available.

The tutor in charge of the class merely arranged for the technician to project the expository film.

The support materials available to the students were: a super 8mm cine camera, a tripod and a dummy cassette of film provided for each group of three students.

TABLE 3

ASSESSMENT MARKS AWARDED TO STUDENTS' CINE LOOPS

(THE CONTROL GROUP)

Loops resulting from exposition made in the TRADITIONAL CLASSROOM SITUATION in YEAR 1976

Loop Identification Number	Consideration ONE	Consideration TWO	Consideration THREE	Consideration FOUR	AGGREGATE MARK
	Maximal Possible Marks				
	5	5	5	5	20
76/1	3	4	4	4	15
2	4	4	4	4	16
3	4	3	4	3	14
4	5	4	2	3	14
5	3	2	2	3	10
6	3	3	3	3	12
7	3	3	4	3	13
8	4	2	4	3	13
9	2	5	4	4	15
10	3	4	3	3	13
11	5	3	4	3	15
12	3	4	4	3	14
13	4	4	4	3	15
14	3	4	4	4	15
15	4	4	4	4	16
16	5	5	4	5	19
17	2	1	2	2	7
18	3	3	4	4	14
19	5	5	4	4	18
20	4	4	4	3	15
21	5	4	3	4	16
22	4	2	3	3	12
23	3	4	2	2	11
24	3	3	4	4	14
MEAN	3.63	3.50	3.50	3.38	14.00

TABLE 4

ASSESSMENT MARKS AWARDED TO STUDENTS' CINE LOOPS

(THE EXPERIMENTAL GROUP)

Loops resulting from exposition made by CINE FILM in YEAR 1977

Loop Identification Number	Consideration ONE	Consideration TWO	Consideration THREE	Consideration FOUR	AGGREGATE MARK
	Maximal Possible Marks				
	5	5	5	5	20
77/1	2	4	4	3	13
2	4	3	3	4	14
3	4	3	3	2	12
4	3	3	3	2	11
5	4	5	4	3	16
6	4	3	4	4	15
7	3	3	4	3	13
8	4	4	4	3	15
9	4	4	4	3	15
10	3	3	3	2	11
11	4	5	4	4	17
12	3	4	3	3	13
13	5	4	4	3	16
14	3	2	4	3	12
15	3	3	4	3	13
16	4	4	3	2	13
17	4	2	4	5	15
18	4	4	4	4	16
19	5	4	4	5	18
20	4	3	3	3	13
21	3	4	4	2	13
22	4	5	3	2	14
23	4	4	5	4	17
24	4	5	3	2	14
25	4	4	3	3	14
26	4	3	4	3	14
27	4	5	4	4	17
MEAN	3.74	3.70	3.67	3.11	14.22

Data Analysis of the Results

The results are arranged in two tables of assessment marks (pages 52 and 53) awarded to the students' cine loops. Table 3 is for the students in the control group and table 4 for the students in the experimental group.

The t test has been applied to each of the five corresponding sets of results to ascertain if the differences of the means are statistically significant.

The data analysis shows that for each and all of the considerations, the differences are not significant. To be significant, at the five per cent level of probability, the t value at 49 degrees of freedom would need to be larger that 2.011 (Tuckman, 1972, p. 320). The computed values of t are found to be as follows (See appendix 4 for computer analyses).

CONSIDERATION	ONE	t = -.52	Not significant
"	TWO	t = -.77	"
"	THREE	t = -.89	"
"	FOUR	t = 1.16	"
AGGREGATE MARK		t = -.36	"

Final Conclusion

From the above results and their analyses, it can be concluded that the experiment does not provide any evidence from which it can be inferred that the cine film "The Making of Film Loops (for Teachers)"

is any more, or less, effective as an expositor in teaching student lecturers at Garnett College how to make 8mm cine loops, than the tutor who had previously made his exposition in a traditonal classroom situation. The cinefilm, in this particular, was as adequate as the tutor who preceded it.

Hence, in answer to the theoretical evaluation question (page 32), it can be stated that: As far as this study is concerned, the inital exposition of a course on 8mm filmloop making can be automated with no detrimental effect to the students i.e. the exposition of the inital lecture can be suitably replaced by a cine film.

Further, at the operational level, students at Garnett College, London, learn to make 8mm filmloops as effectively when the inital exposition of the subject matter is by the cinefilm "The Making of Film Loops (for Teachers)" as when the exposition was by a tutor in the traditional classroom situation.

On the other hand, the study raised reasons for further thought concerning: (1) some decisions that had been initially made in the practical situation, and (2) some questions that had arisen as a result of the study.

DISCUSSION

Introduction

The study gave rise to re-examination of two earlier made decisions concerning: (1) the content inclusion in the expository film about camera controls; and (2) the use of super 8mm film. New problems also had arisen and centred around the criteria for assessing a new educational method, the economic viability of cinefilm expositions and areas where further research might usefully be made.

Is the early part of the Expository film about Camera Controls Necessary?

Informal talk between the researcher and some of the students of the course about which parts of the expository film were considered by them to be of useful application in the making of their filmloops yielded the following.

Student Views on the Usefulness of Sections of the Expository Film

(1) Most useful application:	The excerpts from loops made by previous students.
(2) Useful application	Internal captions illuminating the scene making captions filling-in a shooting script form film characteristics
(3) Mixed views expressed	camera controls

Some students were concerned about the shots depicting positions and functions of the various camera controls. This part of the film totals about four minutes of screening time. Details of the controls had been included by the researcher because course planning assumed that the students may never have handled a cine camera before. It was realised that this assumption with some classes may not apply to all the students. An alternative method considered before the making of the expository film was to have available copies of the manufacturer's booklet which detailed such controls. The researcher had decided against this procedure for three reasons: (1) He wished for convenience to have, if possible, only one source of exposition; (2) He wished to be as certain as he could be, that all the students were shown the functions of the controls before they were presented with further information; (3) He considered that the expository film would be a quicker and more certain method of instruction than having the students read the booklet. None the less, there is no doubt, that presentation to some students of information which they already had or could attain for themselves, was a boring situation for them. However, none of the students suggested (or so it seemed to the researcher) a better procedure.

The Medium of Super 8mm Film

It has been seen (page 12) that the researcher considered carefully before making the expository film whether to use 16mm or 8mm super film. The former had all the photographic advantages e.g. ease of

processing and of printing. In particular, negative colour super 8mm film is not available on the commercial market up to the present time. Reversal (the only available) film is intended for viewing and has consequently a high contrast emulsion which yields copies of poor quality - negative film is normally of low contrast and yields high grade copies. So far as any other researcher may be wanting high grade copies only (i.e. he foresees a commercial production run), the shooting of the expository film should be made with 16mm film.

The Working Life of Super 8mm Film

The working life of film depends in the classroom situation on the extent of physical damage to the base and (possibly) to the emulsion. (In the archive/library situations, changes of colours over periods of time due to chemical changes in the emulsion are also a factor. Such changes are not normally of significant account in educational situations).

Physical damage to film is of two types. (1) Scratches on the emulsion produce vertical black lines on the projection screen. (These scratches are produced by dirt in the film track of the projector). The vertical black lines on the projection screen are irritating to the viewer and aesthetically depreciatory. But it is doubtful if they detract very much from the instructional effectiveness of the film. (2) Of most importance is damage to the sprocket holes of the film.

Every screening of the film damages the sprocket holes to some extent, even though it be normally only a very little. The damage is

accummulative; films have a limited effective life. The length of life depends (a) on the projector and (b) on the usage (way of running) of the film. Of the projector used for screening the film, it can be said that as a general rule, the more expensive projectors (because of better engineering finish) cause less wear and tear to the film than do cheaper projectors (as might well be expected).

Usage of the film, in the researcher's experience, is in his College, the prime determiner of how long the film life will be. Most wear and tear on the film occurs when the projector changes speed i.e. (i) when it is stopped (ii) when it is started, and (iii) when it is put into reverse. So when films in the middle of their screenings are frequently stopped, restarted and reversed, wear and tear is high and film life is short. The researcher has experienced newly processed film with broken sprocket holes within an (estimated) dozen passes through the projector (a 'pass' is either forward or reverse) – where the film was being stopped at the same place in the middle and then put into reverse. On the other hand, he thinks that many films will stand many times this number of forward and reverse runnings before repair is necessary. The weights (lengths) of film on the feed and take-up spools are obviously an important determinant of wear in this forward/reverse running i.e. the wear at the sprocket holes with film coming from (say) a 50 feet spool will be less than if the spool had contained (say) 400 feet.

When a sprocket hole has been broken, the result on the screen is a flickering picture. The hole can be repaired but the serial sprocket

holes after the broken hole are also damaged and will soon afterwards need repair. There comes a limit, necessarily, to the total number of holes that can be repaired, and it is preferable then to discard the film.

The researcher has so far not been able to find any details of tests on the useful life of cinefilms, so he can speak only out of his experience. It seems to him that a reasonable estimate for super 8mm film of the number of forward-only open reel projections may be a limit of about a hundred, and this provided splicings (say, up to ten) are made when necessary. After these hundred screenings, the picture becomes increasingly unsteady with attendant uncomfortable viewing.

When the film is used in theforward/reverse mode, and the reverses are made more or less at the same place in the middle of the film, the number of acceptable screenings drops noticeably to possibly only thirty or forty. At this stage, the frequency of repairs to broken sprocket holes makes the screening process a time consuming and laborious affair.

Let it be stressed that these figures are only estimates and refer to students using open reel projectors.

When film is used in 50 feet cassettes, the film-life seems to be somewhat longer – possibly 200 viewings may not be far wrong. Around this figure (200) the picture on the screen, as was found above with the open reel projector, becomes increasingly unsteady and correspondingly uncomfortable to watch.

The Cost of Viewing the Expository Film

The above findings are important in so far as they are of application in costing cinefilm projections. If the copy of the film costs (say) £100 (as it probably will on the commercial market for half an hour's viewing) and sections of it become so damaged by forward/reverse projections that it screens for only 30 to 40 times before it has to be discarded, the cost per projection is about £3. If twelve students are viewing it, the cost of viewing per student is about 25 pence. This may be considered by some educational finance committees to be too much.

Four Questions asked about a New Educational Method

Cooper and Foy (1967) in a review on students' attitudes to learning from media, lectures and textbooks suggest that when a new educational method is proposed, four questions should be asked. Is the new method: (a) instructionally efficient? (b) educationally desirable? (c) can it be conveniently organised? (d) is it economically viable?

Applying these questions to the present study, it has been seen that the replacement of the tutor's exposition by cinefilm seemed to be no less efficient than his lecture in a traditonal classroom situation. Further, the expository film was certainly 'educationally desirable' for it freed the tutor (for as long as the film was screening) to do those other tasks only he as a person could do. To the third

question concerning administrative convenience, it can be answered that the film freed the tutor from having to be available to the class during the screening of the film.

Is the Expository Film Economically Viable?

But to answer the last question: "Was the cinefilm economically viable?", a breakdown of the possible costs of making such a film is necessary. These costs in super 8mm format are estimated likely to be as follows (for 35 minutes of screening time).

	£ Sterling
Scripting (20 hours at £15 per hour)	300
Film (24 cassettes/sound at £5.36)	128
Hiring studio and equipment (say 15 days)	575
Editing 10 hours at £10 per hour	100
Diagrams and captions	90
Print of film plus sound (magnetic) dubbing	138
	1,331

To these costs must be added director's fees. The film runs for 35 minutes, so its marketable retail value would probably be in the order of £100 of which the royalties would be (say 10%) £10 per copy. In the U.K. there are something like 200 colleges of education of which about a quarter seem to run courses for the making of instructional filmloops. If all of these (50) colleges bought a copy of the film, the return revenue would be £500 - far short of the production costs. The cinefilm is not

a commercial proposition unless a much wider market than the U.K. is considered.

This marketable viability of the film has at first glance nothing to do with the instructional application of the film in the classroom (and hence with this study). But a longer look reveals that this lack of marketable viability is one of (possibly the major reason) why more tutors do not replace their expositions by cinefilm. The cost of production of such films outweighs the expected financial return.

Another way of considering the financial cost of cinefilms is to look within the educational institions. It has been said (and twenty years ago the researcher would have subscribed to it) that if film was to replace a tutor, a financial saving would result. The reasoning goes: as this. The cost of film for thirty minutes is roughly £100. The film can be screened (say) 50 times before wear and tear make replacement necessary. The total screening time is hence $\frac{1}{2} \times 50 = 25$ hours. For this 25 hours a tutor is paid (say £10 per hour) £250. The saving by using the film will be (£250 – £100) £150. The film on this basis is £6 per hour cheaper than the tutor. It is certainly an arithmetically correct assertion. Such a statement has been found in the past to be a powerful argument to put before educational financial committees to persuade them to finance media research projects – and no doubt it will be found to be equally applicable in the future. But several factors militate against it overall correctness.

First, the researcher has never as yet met a case where at the end

of the project the number of staff has been reduced. The only result has been that the cost of the instruction within the institution has been increased by the cost of the project. Secondly, the replacement of a tutor for a short period of time is not a viable proposition. In the case of the present study, the screening time of the film was 35 minutes; for the other 5 hours 25 minutes of the course, it was seen that it was necessary for the tutor to be present. What happened was in Cooper and Foy's (1967, page 292) words "...the use of film...has gone some way towards easing the pressure on human teaching resources." The cost of the students' instruction had been increased by the cost of the film but the quality of the educational situation had also risen.

This rise in quality is part of the technological revolution about us in life itself. The researcher some time ago was visiting Salisbury Cathedral where an old clock (made entirely by handtools in 1386) was still ticking away the time. Nearby was a museum where another clock was also showing the same time – it had been made in 1820 and was a product of the industrial revolution – the clock had been made on machines minded by men. In contrast, in a Woolworth's shop window not far away were some modern wrist watches – products of the present automation revolution – with pictures showing how in the making of these watches, bars of metal fed into one end of a machine and finished parts appeared at the other end. Only when the parts were fitted together to form the movement, were they touched by human hands.

It seems to the researcher that exposition in education must be

likewise controlled - and that classroom instruction today is in some ways still like the cathedral clock, back in the fourteenth century. There is a necessity in the classroom to programme the educative process whenever the quality and the quantity of the resulting student learning can be maintained or improved. In the present study, a cinefilm replacement of the tutor's exposition seemed a step in the right direction.

Suggestions for Further Replacements of Personal Expositions by Media

It should be clear from what has so far been said in this study, that the researcher sees the possibility of replacing expositions only (and not necessarily replacing other forms of instruction) by media. Whenever the tutor is in the position of having to provide decisions for the solution of problems arising out of spontaneous situations, media may be totally impossible or at least extremely difficult. But where the objectives are clear, the subject matter to be taught is straightforward, and the situation need not necessarily give rise to immediate personal tutor-student interactions, a medium may be a possible method of replacing a tutor's personal exposition. Further, whenever a pre-planned exposition is delivered to students on a repetitive basis in traditional classroom situations, some form of media may be used to replace the personal delivery and thereby forestall the repetition. Whether such a medium is worth constructing depends on the number of repetitions to be made and the extent and cost of production of the programme. It has been seen (page 63) that the estimated commercial

cost of the researcher's film would have been an estimated £1,300 plus director's fees. If this sort of funding had been a first necessity, the study would not have begun (i.e. the hiring of equipment and services in this study were provided gratis). For other projected studies (assuming that sufficient funds are available to proceed) several directions could be taken from the present study. The most obvious is the extension of the provision of super 8mm films to cover other aspects of super 8mm photography (in education). A cinefilm to show how sound can be put onto 8mm would be an asset to the members of any "8mm Sound Recording Course."

Another possible extension is to "hours three and four" of the filmloop making course (described in this study) for teachers who are experienced amateur cine photographers. Such a class is held only occasionally in the researcher's college and its infrequency would proscribe the making of a cinefilm to replace the exposition. But the making of such a film could be a worthwhile proposition for any local educational authority who may hold such courses throughout the year.

The researcher feels that the section of his film on script writing could be enlarged to a half hour cinefilm for amateur cine photographer teachers interested in making concept loops and with adequate time available for making them. This section of the researcher's film is felt by him to be inadequate but in the time available for the exposition, he cannot see any change that can be made with resulting improvement.

On wider issues, any part of concept filmloop making can with

advantage be made the topic of an expository film. Two such films (made for amateur cine photographers and not specifically for teachers i.e. the settings are outside the educational sphere) are recommended for viewing by the reader and any others who may be interested: "Frame by frame: The Art of Animation" and "Film Graphics: Abstract Aspects of Editing." Teachers who are also amateur photographers and who make concept filmloops would benefit from seeing the topics of the above two films reshot in educational situations.

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APPENDICES

APPENDIX 1

SCRIPT FOR 8mm CINEFILM (SOUND)

"THE MAKING OF FILM LOOPS (FOR TEACHERS)"

Shot number	VISUAL	SOUND
1	CAPTION: The Making of Film Loops (for Teachers)	MUSIC: Rossini's Thieving Magpie
2	L.S. P. and class	VOICE: L.S.P. And that will give us the pressure of of the air. Well, now, let's have a look at one or two more examples and this time I have put them on a concept loop film for you to see. So we'll have a look at this.
3	CAPTION: Concept Loop	
4	L.S. P's experiment	COMMENTATOR: What we are seeing is a teacher in a classroom using within his lesson an 8mm film loop. Such a loop, today, is playing an

		increasingly vital part in the exposition to students of subject matter.
5.	Library	Loops are available commercially in their thousands. Provision for their loan to teachers is now a normal function of resource centres and of most college libraries. Some of these commercial loops are designed for the student's self instruction. Other loops are intended for insertion by the teacher into the traditional classroom situation.
6	Students making loops (I)	But of equal importance to commercial loops are those loops made by practising teachers for their own classes.
7	(II)	The purpose of the film that you are now
8.	(III)	about to see, is to show the teacher who at the moment knows nothing about photography, how he or she can make loops to teach within his or her own specialism.

9	(IV)	Such loops, made for specialist classes, can be of value to the general public also.
10	(V)	The loop being made here concerns a very common task found necessary even in every household - it is, an examination of some of the different ways available of measuring weight.
11	Baize with camera, film, tripod and their respective captions appearing serially	The basic equipment for the making of film loops comprises a camera, film and a tripod.
12	Student before table on which is camera, tripod and film	You should have one of each of these on the desk before you.
13	Projector and hand	When the screen directs you to do so, you should stop the projector and familiarise yourself with the uses of these pieces of equipment.
14	Camera with BODY caption	First, let's look at the camera. It has a body which contains and transports the film.

15	Inside of camera with rotating drive	This is the inside of the camera where the cassette fits. Turning in the centre is the wind mechanism which runs the film through the cassette.
16	Camera with captions LENS, GRIP, TRIGGER serially	Other main parts of the camera are the lens, the pistol grip and the trigger.
17	Hand operating trigger	The trigger starts and stops the filming. When the trigger is pressed horizontally backwards towards the operator, the film starts running.
18	Camera and student	When the trigger is released, the film stops running.
19	Trigger and hand	Running.....stop. Running.....stop.
20	Camera and caption TRIGGER LOCK	The trigger has a locking device so that when the camera is not in use, the film cannot be started running accidently.
21	Camera with caption EYEPIECE	Through the eyepiece or viewfinder of the camera, the operator sees what is being filmed.

22	Cow scene (framed)	So here, with the film running, this scene will be recorded.
23	Student Holding camera	The camera is held by the pistol grip in the right hand and the firm holding of it is important.
24	Other side of camera	The lower three fingers and thumb encircle and clasp the grip tightly so as to make a rigid support.
25	Front view of camera	The index finger is left free to work the trigger.
26	Both hands on camera	The left hand steadies the top of the camera and works some controls to be found near there.
27	Hand working focusing ring	One of these controls is the focusing ring of the lens.
28	View of fiver in focus	The focusing ring must be set to the distance between the camera and the scene being filmed.
29	Caption: IN FOCUS	The lens is then said to be in focus.

30	View of river as shot 28	The various objects (or detail) in the scene are sharp and well defined.
31	River out of focus	If this distance is incorrectly set, then the lens is out of focus.
32	Caption: OUT OF FOCUS	The picture is blurred; the detail is not well defined. It lacks sharpness.
33	Camera and caption: MANUAL ZOOM	The left hand also works the manual zoom control.
34	Hand moving zoom	The zoom moves the lens from wide angle to telephoto shots and vice versa.
35	Camera and caption: POWER ZOOM	A third control is the power zoom.
36	Side of camera with thumb operating zoom	Pressure by the thumb downwards moves the lens to wide angle. Upward pressure takes the lens towards telephoto. The advantage of power zooming is that it is usually much smoother than manual zooming. The facility of zooming is that it aids

		the selection of the scene being filmed. It is a framing device.
37	Rock and sea scene. Zoom from wide angle to telephoto	Here is an example of the use of the zoom. From wide angle the lens moves to telephoto.
38	Rock scene. Zoom from telephoto to wide angle.	On the other hand, this shot of the rock starts with telephoto and moves to wide angle in order to show the setting of the rock.
39	Caption: ZOOMING AND FOCUSING	Now let's look at zooming and focusing together, for there is an important practice to follow. Before using the zoom, we focus at maximal telephoto.
40	Electronic component (out of focus). Focus.	Otherwise shots towards and at telephoto may be out of focus. This is part of a loop on electronic equipment. At the start of the shot, the zoom is at wide angle and the cameraman is focusing. Notice that he goes through the focus and

		returns – that is, he makes successive approximations towards the best possible focus.
	Zooms to telephoto	Now he zooms to telephoto.
		You notice that the focus at telephoto is no longer as sharp as it might be.
	Focuses at telephoto	So to put matters right, he focuses at telephoto and when he zooms back wide angle, he is still in sharp focus.
	Zoom back to wide angle	
		The moral: Always focus at maximal telephoto.
41	View of the Pagoda (unsteady)	Here is another example of the use of the zoom.
	Zoom to telephoto	The camera is held in the hand and the shot is unsteady.
42	Tripod	It is essential to use a tripod with telephoto shots.
		For the tripod provides a firm support for the camera.
	Manipulate the leg lever of the tripod	The legs of the tripod are adjustable in length and are secured by clips.
43	Top of tripod	The base of the camera is screwed to

		the platform at the top of the tripod. There are two screws – a centre holding screw and on the outside of it, a larger locking screw. /
44	Pagoda (steady). Zoom to telephoto	The telephoto shot of the Pagoda is now quite steady. The moral is: Always use a tripod if possible.
45	River shot (wide angle)	This shot is made with the lens at wide angle – as wide an angle as the lens provides. Such a shot is context setting and often precedes the zooming in to a telephoto shot which is selective and excludes unwanted detail.
	Zoom in	
	Caption: TELEPHOTO	
46	Head of tortoise (close up)	Here is another example of a telephoto shot. This time a close-up lens has been screwed onto the camera lens so as to be able to get closer to the subject.
47	Tortoise (in full)	The close-up lens has now been removed to give a context setting.

So whether a shot is wide angle or telephoto is relative to some extent to what has been shot before and to what is to follow.

48 Caption: PANNING

The tripod head has a ball fitting which allows the camera to be moved in any direction.

When the camera is turned in a horizontal plane, the action is called "panning."

Panning is first a means of following a moving object and, secondly, a way of setting a context.

In the latter case, the lens of the camera at wide angle is found to be insufficient to cover the scene, so the camera is rotated horizontally – just as we turn our heads to see a wider scene than the view afforded by our eyes.

50 Caption: TILTING

Glider shot

When the camera is moved in a vertical plane, the movement is called "tilting."

Tilting is, therefore, either upwards or downwards.

In following such as an aeroplane, or as

		in this example, a glider taking off, tilting is necessary to keep the object in view. The qualities of good tilting are identical with those of good panning – first, smoothness and secondly, if the scene is static, slowness of movement. However, when the object being filmed is moving, the criterion becomes one of keeping the object in the centre of the field of view.
51	Caption: TIME FOR PRACTICE Caption: Details to practice	The time has almost come for you to stop the projector and to practise the things that you have seen on the screen. Use the camera before you and try: Holding, shooting, zooming and focusing.
52	Caption: SWITCH OFF PROJECTOR	Now switch the projector off and switch on again when you are ready to look at the next section.
53	Black screen	

54	Film before processing	The film that you will use for making your loop is called 'super 8mm.' Before processing, that is, in the cassette, the film is a buff colour on the emulsion side and black on the reverse.
55	Film after processing	Suitable exposure of the film in the camera produces a series of rectangular, separate pictures called 'frames.' We see these frames after the film has been processed.
56	Diagram of film	In the name 'super 8mm,' the 8mm refers to the width of the film – it is about a third of an inch.
57	Diagram of format	The title 'super' refers to the format. the format is four horizontal units by three vertical units. You will need to remember these proportions particularly in selecting your shots and in making captions.
58	Film in the cassette	The film is contained within a cassette that has an end window where exposure

		occurs.
	Turn cassette	The type of film is marked on the outside of the cassette.
59	Caption: Instructions for loading the cassette into the camera	When loading the cassette into the camera, we follow these directions.
60	Camera (on masked tripod). Insert cassette	The camera door is opened by pressing a button at the rear. The cassette window goes towards the lens of the camera; the marking of the type of film goes towards the outside of the camera.
61	Camera with caption: WINDOW Camera window showing type of film	The camera door has also a window and through it can be seen the marking of the type of film.
62	Camera closed. Remove cassette	The cassette can be removed from the opened camera at any time by pressing with the right thumb on the back edge of the cassette.
63	Camera with caption: FOOTAGE INDICATOR	The footage indicator shows the length of film shot.

64	Footage indicator in close-up	The indicator reads from nought to fifty feet.
65	Camera with caption: FILM ADVANCE SPEED	The camera has two film advance speeds of 18 and 24 frames per second. Silent films are normally shot at 18 frames per second.
66	Super 8mm film	Super 8mm film has six frames to the linear inch.
67	Caption: 18 f.p.s. etc.	So at 18 frames per second, a cassette of fifty feet lasts 200 seconds.
68	Film put into camera	The film in the camera must be suitably exposed to the scene.
69	Woodland scene. Rapid zoom from wide angle to telephoto	
70	Over-exposed film	Over-exposure gives weak images which have a washed-out appearance.
71	Under-exposed film	Under-exposed films are dark and lack detail.
72	Camera over outline	The film in your camera is exposed

	diagram	automatically.
	Remove camera	Light from the scene comes into the lens.
	Animate diagram as required	Most of the light goes to the film.
		But some of the light goes to a photo-electric cell which controls a device that works an iris diaphragm.
73	Iris diaphragm – animated	The centre formed by the hexagon is the lens as seen from inside the camera.
		The haexagon is formed by six movable metal leaves.
		These leaves open and close.
		They are part of the iris diaphragm.
		If the scene is poorly lit, the iris opens wide.
		This is called focal number two – or simply F2.
		If the scene is brightly lit, the iris closes and forms only a small opening such as focal number 16 – or simply F16.
74	Caption: F STANDS FOR FOCAL	

75	Caption: Focal numbers	The iris, then, keeps the quantity of light on the film a constant, whether the scene is brightly lit or dark.
76	Iris diaphragm with F numbers animated	High focal numbers such as F22 produce overall detailed sharpness in the film image. Low focal numbers such as F2 give reduced overall sharpness.
77	Animated diagram of viewfinder	The viewfinder of your camera is called 'a single lens reflex.' This means that a small part of the light entering the lens is taken by relecting mirrors (hence the name 'reflex') to the eye of the camera operator.
78	Caption: ILLUMINATING THE SCENE	
79	Film against human eye	Compared to the human eye, photgraphic film is insensitive.
80	Strip lighting	For example, the lighting in a normal classroom is quite unsuitable for film making; it is the wrong colour temperature.

81	Chandelier	Even a chandelier, such as this, gives an inadequate light.
82	Card (white) exposed by light from chandelier	This is a white card (correctly exposed) and filmed with light from the chandelier.
83	Camera with caption: ARTIFICIAL/DAY LIGHT CONTROL	Film has to be exposed in either special artifical light or in daylight. The artificial/day light control on the camera has to be set accordingly.
84	Typing room	A suggestion is, if possible, shoot in daylight. There is one rule - always have the sun behind the camera.
85	Typist with sun from behind	The sunlight illuminates the scene being filmed.
86	Hazy sunlight	Further, if it is possible to choose your occasion for shooting, choose hazy sunshine rather than bright sunshine.
87	Horse scene	Bright sunshine gives hard shadows.
88	Hazy sunshine	With hazy sunshine, the shadows are

89	Hazy sunshine (ii)	softened.
90	Artist's studio	However, daylighting has its drawbacks. One of these drawbacks is the sun suddenly appearing out of, or, disappearing into, cloud. This shot is part of a loop on the cleaning of old paintings. Daylight had to be used. The balance of colours that the human eye sees, changes with different sources of illumination. The artist felt that she shouldn't risk working in any light other than daylight.
91	Floodlight turning	Artificial light for film making is provided by special flood lamps such as this. The colour temperature of the film and lamp are balanced.
92	Person filming caption Bring in floodlamp	When filming a caption or something flat and small, a single floodlamp will be sufficient. Such a light is normally placed slightly

		above and close to the camera.
93	Caption	Here is the caption.
94	Picture	Pictures, unless they are very large, also require only a single lamp.
95	One light illuminating a scene (hard shadows)	When three dimensional objects or when people are illuminated, usually at least two lamps are required. One lamp only produces hard shadows.
	Bring in second lamp	So a second light – called a 'fill-in-light' is added. The first lamp is then called the 'principal light.'
96	Schematic diagram (animated)	This schematic diagram illustrates the general lighting pattern. One lamp (the principal light) is set slightly above the camera and gives hard shadows. A second lamp (the fill in light) reduces the hardness of the shadows.
97	Duplicator and one lamp	The same scheme applies to the lighting of apparatus.

		The principal light gives hard shadows.
	Bring in fill in light	The fill in light reduces the prominence of the shadows and makes them acceptable.
98	Caption: THE APPEARANCE AND DISAAPEARANCE OF OBJECTS	
99	Camera, film and tripod with captions appearing in sequence	Let's look back to this shot. Each of the camera and its caption, the film and its caption, the tripod and caption appear in sequence. We can ask: How is it done?
100	Green baize	We start with a green background and film it for one second only.
101	Caption: STOP FILMING	
102	Put camera onto baize	With the film stopped running, we lay on the baize the camera that is being filmed and film it for one second only.
	Caption: STOP FILMING	
	Put caption: CAMERA into position	The caption is put into position and filmed for one second only.

	Put film into scene	Then the packet of film is put into the scene and filmed for one second only – and so on.
	Continue putting objects into the scene	The process consists of starting and stopping the filming and putting objects into the scene whilst the filming is stopped.
103	Boat on river	On the other hand, the process of removing objects whilst the camera is stopped results in the disappearance of the objects.
	Boat disappears	Here the filming was stopped with the boat in the scene and then restarted when the boat had passed on.
	Irene walking towpath	It is, of course, essential that the background remains unchanged during the non-filming.
	Irene disappears	Did you notice here that not only did the lady disappear but that the boat in the centre of the background did a little leap forward?
104	Chalkboard with writing disappearing letter by	Animation is a process that makes full use of stopping and restarting filming,

	letter	whilst additions to, and substractions from, the scene are made with the filming stopped.
	Caption: STOP FILMING	Here, the whole title on the chalkboard was filmed for a quarter of a second.
105	Chalkboard - rub off a letter	Then with the filming stopped, the last letter was erased.
106	Caption: RESTART FILMING Rub off another letter	The filming continued for another quarter of a second, A second letter was erased and so on.
107	Red squares appearing on a green background	Animation lends itself to the building of diagrams. But the chemists among you should see possibilities for molecular and atomic representations and the engineers the facility for building models.
108	Camera and feltboard. Put in blue cloth and shoot etc.	You will recall that the shooting speed for silent frames is normally eighteen frames per second. So one frame lasts for one eighteenth of a second. In our example, each shot consists of

four frames, that is, four presses of the cable release.

109 Cable release

A cable release is necessary to ensure that the camera remains completely still.

110 Camera - screw in cable release

The release screws into the front of the camera.

111 Caption: THE MAKING OF CAPTIONS

The word 'caption' refers to verbal matter, diagrams, pictures, graphs, etc. as two dimensional visual exhibits.

112 Printed poster

Captions can be made on printing presses and as such are very attractive. But it is doubtful if the amount of time

113 Printing press

required to set the type and take a good pull make the process a viable proposition for the teacher.

114 Plastic letters

Captions of assorted plastic letters take less time to make.

115 Bench scene

They yield something approaching a finished look.

116	Paper model of soldering iron	Paper models can also be used effectively. This shot and the next form an introduction in a loop on soldering transistors into circuit.
118	Poster: barrel organ	Occasionally, a poster may well be found that provides a wanted title.
119	Ivan making captions	A useful size for captions is roughly twelve inches by nine inches. If they are verbal, few words are preferable to many. Likewise, diagrams should be kept simple. So, for those persons who are pressed for time, possibly the quickest way to produce captions is with a felt pen on A4 paper. This demonstration that we are seeing results in a verbal caption. But it equally could have been a diagram. For a verbal caption, two light pencil lines about an inch apart are drawn. Using the lines as guides, the letters of the caption are lightly pencilled.

The use of a felt-pen (a suitable end is about a quarter of an inch wide) completes the process.

Again, if coloured paper is used, then the colour of the ink needs to be chosen carefully.

White paper produces a glare but yields an acceptable exhibit for the classroom.

120 Caption: WRITING THE SCRIPT

121 Script form (blank)
Zoom to title, 'objective' and 'audience'

Insert written objectives in sequence

Insert audiences in sequence

If raw film is to be shot effectively, planning is required and the end of planning is a shooting script.

The script should first state the objectives of the film loop in behavioural terms; that is, it should be stated what the viewing audience will be able to do after viewing the loop that cannot be attempted at the beginning.

Closely connected with such objectives is the initial behaviour of the viewing audience.

So a statement about the students for whom the loop is designed should be made.

122 Shooting script – zoom in to column titles First column. Then pan to second column etc.

The main body of the shooting script comprises five columns.

The shot numbers are obviously serial.

The second column shows the length of each shot i.e. its duration in seconds.

Accumulated time column

Then follows the accumulated time in seconds.

You will recall that your loop will total not more than two hundred seconds – that is, fifty feet of film.

Camera column

The fourth column shows details of camera usage and should include such zooming, panning, tilting and the attachment of close-up lenses.

Scene column

The last column indicates what is to happen in the scene.

A brief description of the scene will include such as the apparatus to be shown, the movements executed and the

appearances and disappearances of such as internal captions.

123 Exemplar script – pan and tilt as necessary

Here is an example of a script.
The first shot is of five seconds duration and will show a person blowing into a breathaliser bag.
The second shot is also of five seconds making the accumulative time five plus five equals ten seconds.
The shot will be of a caption.
The third shot will last 23 seconds so that the accumulated time is 33 seconds.
The camera will zoom out, pan and tilt as is necessary.

124 Goonhilly Downs

In selecting material for a film loop, the number of still pictures is usually kept to a minimum.
None the less, still pictures are often required to give a setting to later shots which include movement.

125 Lens of Lighthouse

This lens of a lighthouse is making full use of the facility of movement afforded

by cine photography.

126 Panning a desert picture

One way of providing movement from a still picture is by panning.

In this example, a photographic print is being panned.

127 Desert picture

This far from the best in cine photography.

But if you are making a loop on different means of travel in the world, you probably have no other way of representing transport by camel.

128 Television news presenter

In the selection of material for your loop, it is suggested that you should be ruthless in putting on the screen only that information which is vital to your topic.

Television news sometimes provides examples of how not to do it.

Occasionally, we see only the news-reader whereas what we want to see are pictures of the events that he is having to describe.

Visually, it is just as informative to

put the back of his head on the screen – or even further down his anatomy, if you wish.

129 Caption: VITAL INFORMATION ONLY

We should put on the screen in our film loops only vital visual information.

130 Caption: EXCERPTS FROM SOME LOOPS

Now let us look at some excerpts from loops.

131 et seq. Perspective excerpt

This loop was titled 'Perspective' and concerns the thickness of line used in making pencil or ink sketches. We see that some of the presented information is typed, and then all is filmed with the use of a close-up lens. The sketches themselves (ink drawings) were comparatively small – about four inches wide by three inches deep. The method of presentation is as a sandwich – that is, the artistic information provided by the drawing is split by the insertion of verbal information.

So, the pattern of presentation is:

first, artistic information;

secondly, verbal explanation is added,

and thirdly, a return is made to artistic

information alone.

It is the only loop included in these

excerpts which is made with black and

white film.

132 Poster: INK MIXING AND MATCHING

This loop was made for printing apprentices and examples the mixing of inks to obtain a given colour and shade.

133 Materials

This shot includes the materials required whilst in the very centre is the sample colour to be reproduced.

134 Mixing process

The aim of this shot is first to demonstrate the process of hand mixing of printing inks and secondly, to illustrate the underlying principle: that the mixing process relies on previous experience but that in the final analysis it is a trial and error affair.

		We should notice that only the essentials on the mixing table top are included in the shot.
		It would, no doubt, have been very flattering to the presenter to have had his face included, but the cameraman, at least, has followed the injunction of 'vital visual information' only.
	Pan from table to machine	Now comes some panning from table to machine.
		It was much practised and is smoothly done.
	Pan and return	Perhaps the pan to the left could have been a little wider, so that the operating hand was also clearly visible.
135	Wider shot of machine	Finally in this excerpt, we have a timely cut to a wider shot that anticipates the next action.
136 et seq.	Wig on machine series	This excerpt is part of a loop on the need for the wearing of hairnets in engineering workshops.
		One problem was the exact moment to

stop the filming of the wig on the head. Then with the camera stopped, the wig was placed on the machine and the filming restarted.

At the same time the wigless operator started falling backwards.

137 et seq. Breathaliser loop

This is part of a loop on the apprehension by the police of car drivers who may be legally unfit to drive.

The opening shot of the policeman coming out of the shadows is well chosen.

The appearance of a car from a house drive forms a suitable link.

Then follows an unfortunate cut.

The idea is that the moving car will pass much too close to the parked car and the policeman will be alerted.

But the restart of the filming is too late and the idea is not clear to the viewer.

There is a combined pan and zoom by

the cameraman.

An easier way may have been to frame at a wider angle.

Thereby, zooming in only would have been necessary; that is no panning would have been required.

Following good teaching practice of concealing exhibits until their time of showing, the whisky bottle is now brought into the picture.

Unfortunately, it is out of focus.

Forgetting to focus is, without doubt, the commonest of faults.

Here, the fault was focusing at wide angle.

Remember focusing should be done always at maximal telephoto.

Then an zoom out is made to frame the shot before the shooting starts.

138 et seq. Colourimeter extract

This extract is from a loop for chemistry students.

The chemical method of the demonstrated analyses involves a

visual comparison of colours.

Against the colours of known concentrations of solutions, is compared the colour of a solution of unknown concentration.

Such a visual method is appropriate for recording on cine film - in other words, it is felt that the subject matter of the loop has been aptly chosen.

There is much use of the camera zoom, for it is necessary that close-ups and wider views should intermingle freely.

Panning is used where necessary.

The glare from the white base is somewhat regrettable - a sheet of light grey card would have been more suitable.

The captions were quickly made with a felt pen on A4 paper.

The red figures and lines of the graphs contrast suitably with the green print of the paper.

139 et seq.	Dress 1922 to 24	This initial close-up sets the viewer wondering what the loop is about. The zooming out to wide angle gives a partial answer by setting the context. The subject matter of the loop is ladies gowns of the years 1922-24. The objective of the initial shot is two-fold. First interest should be awakened - the bird embroidery aims to do this. Secondly, a general all-round view of the dress and stole should be provided. Then the camera in close-up will example particular details of design and decoration.
	Still flash	The flash is from a still camera. Flashes can be edited out of film but it is suggested that the easier way is to avoid them by separating still flash and cine filmings.
		The panning of the camera here is a little jerky. On the other hand, the tilting down is reasonably smooth and goes almost

without notice.

140 et seq. Connecting rods

This extract is from a loop on the design of connecting rods of engines and is intended for engineering students. The main objective of the loop is to illustrate some of the similarities and differences of design between connecting rods of half a century ago and those of today.

The exhibits in this extract were all filmed in daylight.

It will be noticed that no serious lighting problems arise and that definition is high.

And this brings us to the end of the extracts. But before you begin selecting your material and start script writing, here is one last shot with a message.

141 L.S.P. and group

Yes. That shot of the clutch of a car demonstrates the concept of friction well.

But is it too complicated?

You see, we've got three minutes of film and we've got a total of six hours of production time.

So now. I wonder if you can think of something simpler.

142 Caption: SIMPLICITY PLEASE

The time has come for you to stop the projector for the last time in this film.

In groups of three persons quickly decide your topic and produce a shooting script.

Remember to think in terms of visual shots.

Happy script writing!

143 Caption: Acknowledgements

144 Caption: Copyright

Appendix 2: Copy of the Handout to Students

Media Resources Unit,
Garnett College, London, S. W. 15.

****
* COURSE: MAKING 8mm FILM LOOPS *
****

NOTES FOR STUDENTS

The objective of the course is that students in teams of three students per team should make a three minute cine loop in colour film so that they will be able to make other similar loops without close supervision.

The course meets weekly for three two-hour sessions.

SESSION ONE	View (duration 35 minutes) the cine film: The Making of Film Loops (for Teachers). In teams of three choose very quickly a topic for a loop and write a shooting script.
SESSION TWO	Collect exhibits; make captions; have trial runs and when satisfied, expose the film. Give the cartridge of exposed film to the Technician who will send it to processing.
SESSION THREE	Preview and if necessary edit the loop. Project the finished loop before the group and give relevant commentary and explanation. Class discussion of the merits and detractions of the loop.

SESSION ONE: Viewing the film: The Making of Film Loops (for Teachers)

On the desk in front of you are: An 8mm cine camera
A photographic tripod
A dummy cartridge of film
Shooting script blank forms

When you are ready, switch on the projector and then follow the screen instructions. After viewing the film, in teams quickly decide a topic for for a loop and start putting together a shooting script. The Course Tutor will be circulating around the teams in order to give advice and check that your script writing is proceeding smoothly.

NOW, SWITCH ON THE PROJECTOR AND HAPPY VIEWING!

Appendix 3: Copy of the Shooting script blank forms supplied to Students

Media Resources Unit,

Garnett College, London, S. W. 15

SHOOTING SCRIPT FOR CINE (SILENT) FILM

OBJECTIVE:

VIEWING AUDIENCE:

Shot no.	Length of shot (secs)	Accum-ulated secs.	Camera	Content of shot

Computer Print-out of the Results for Consideration ONE

```
9900 DATA 1,24,27
9901 DATA 3,4,4,5,3,3,3,4,2,3,5,3,4,3,4,5,2,3,5,4,5,4,3,3
9902 DATA 2,4,4,3,4,4,3,4,4,3,4,3,5,3,3,4,4,4,5,4,3,4,4,4,4,4,4
RUN
T-TEST

SAMPLE          SAMPLE SIZE     MEAN            STANDARD DEVIATION
 1               24              3.625           .923721
 2               27              3.74074         .655896

 THE POOLED DEVIATION IS .792956    AND THE STUDENTS T
VALUE IS-.520283    AT 49   DEGREES OF FREEDOM.

PROBABILITY OF T>= TO-.520283    WITH 49   DEGREES OF FREEDOM
IS .302605

DONE
```

Computer Print-out of the Results for Consideration TWO

```
9900 DATA 1,24,27
9901 DATA 4,4,3,4,2,3,3,2,5,4,3,4,4,4,4,5,1,3,5,4,4,2,4,3
9902 DATA 4,3,3,3,5,3,3,4,4,3,5,4,4,2,3,4,2,4,4,3,4,5,4,5,4,3,5
```

```
RUN
T-TEST

SAMPLE          SAMPLE SIZE     MEAN          STANDARD DEVIATION
 1               24              3.5           1.02151
 2               27              3.7037        .868899

 THE POOLED DEVIATION IS .943611    AND THE STUDENTS T
VALUE IS-.7695      AT 49    DEGREES OF FREEDOM.

PROBABILITY OF T>= TO-.7695.    WITH 49    DEGREES OF FREEDOM
IS .222645

DONE
```

Computer Print-out of the Results for Consideration THREE

```
9900 DATA 1,24,27
9901 DATA 4,4,4,2,2,3,4,4,4,3,4,4,4,4,4,4,2,4,4,4,3,3,2,4
9902 DATA 4,3,3,3,4,4,4,4,4,3,4,3,4,4,4,3,4,4,4,3,4,3,5,3,3,4,4
```

```
RUN
T-TEST

SAMPLE          SAMPLE SIZE     MEAN            STANDARD DEVIATION
 1               24              3.5             .78019
 2               27              3.66667         .5547

 THE POOLED DEVIATION IS .670059   . AND THE STUDENTS T
VALUE IS-.88662      AT 49    DEGREES OF FREEDOM.

PROBABILITY OF T>= TO-.88662     WITH 49    DEGREES OF FREEDOM
IS .189807

DONE
```

Computer Print-out of the Results for Consideration FOUR

```
9900 DATA 1,24,27
9901 DATA 4,4,3,3,3,3,3,3,4,3,3,3,3,4,4,5,2,4,4,3,4,3,2,4
9902 DATA 3,4,2,2,3,4,3,3,3,2,4,3,3,3,3,2,5,4,5,3,2,2,4,2,3,3,4

RUN
T-TEST

SAMPLE          SAMPLE SIZE     MEAN            STANDARD DEVIATION
 1               24              3.375           .710939
 2               27              3.11111         .891556

 THE POOLED DEVIATION IS .811797    AND THE STUDENTS T
VALUE IS 1.15871     AT 49    DEGREES OF FREEDOM.

PROBABILITY OF T>= TO 1.15871     WITH 49    DEGREES OF FREEDOM
IS .126094

DONE
```

Computer Print-out of the Results for AGGREGATE MARKS

```
9900 DATA 1,24,27
9901 DATA 15,16,14,14,10,12,13,13,15,13,15,14,15,15,16,19
9902 DATA 7,14,18,15,16,12,11,14
9903 DATA 13,14,12,11,16,15,13,15,15,11,17,13,16,12,13,13
9904 DATA 15,16,18,13,13,14,17,14,14,14,17

RUN
T-TEST

SAMPLE          SAMPLE SIZE     MEAN            STANDARD DEVIATION
 1               24              14              2.50217
 2               27              14.2222         1.8674

 THE POOLED DEVIATION IS 2.18841    AND THE STUDENTS T
VALUE IS-.36196     AT 49   DEGREES OF FREEDOM.

PROBABILITY OF T>= TO-.36196     WITH 49   DEGREES OF FREEDOM
IS .359469

DONE
```