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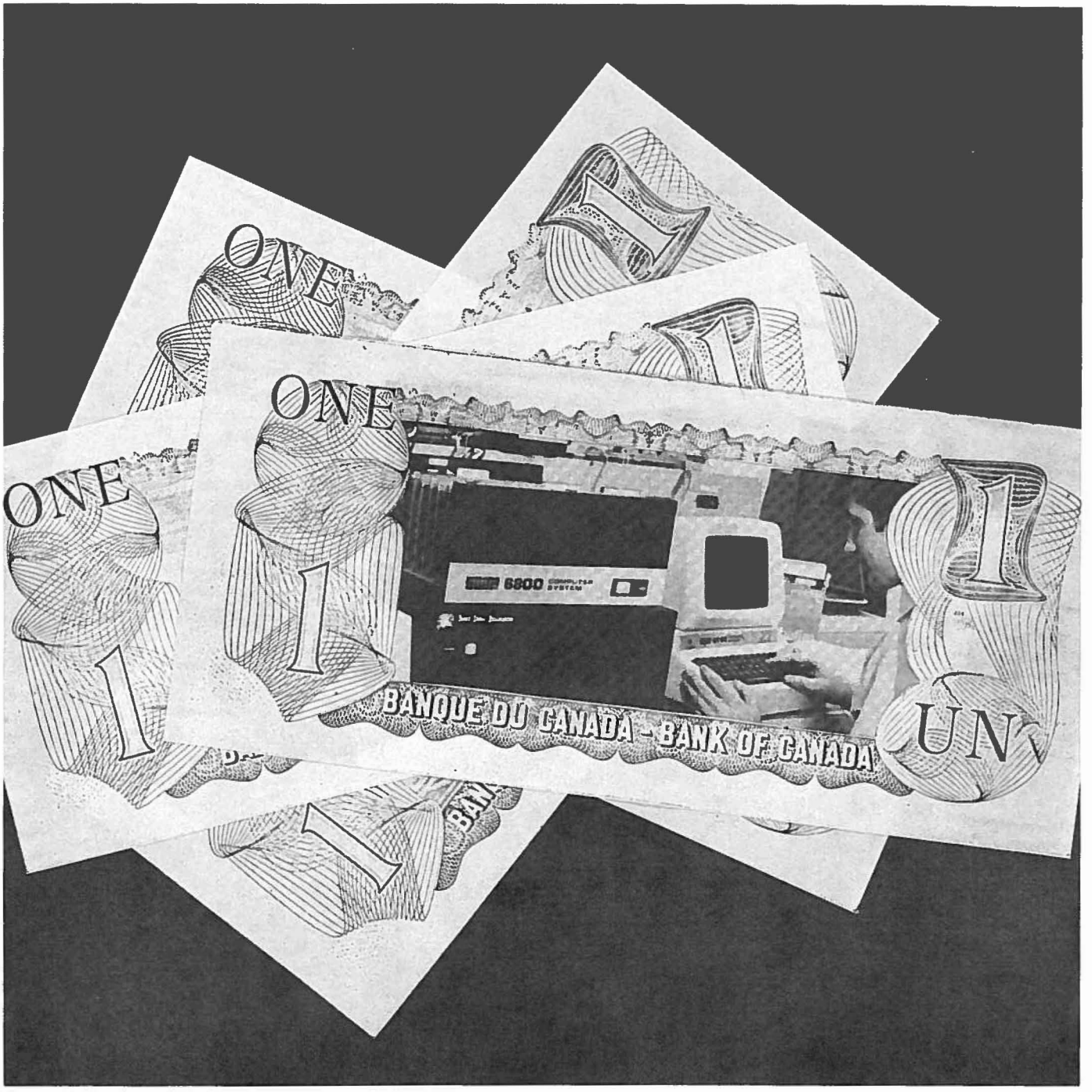
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Trends in Educational Finance and Their Implications for Educational Technology

W.R. Duke

My task is to examine trends in educational finance and identify some implications for educational technology. The first part of this assignment (financial trends) is somewhat easier than the second part (implications for educational technology). On the positive side, however, my views on educational technology are not overly cluttered with knowledge of that subject.

There are three themes derived from cultural concerns that stand back of the occurring and recurring trends in education finance that we have seen in this country in the last four decades. (Rideout, 1980) These themes, namely: equity, efficiency and liberty, are intertwined in such a way that the achievement of too much of one diminishes the achievement of one or both of the other two.

Equity Theme

What are these themes that have jockeyed for position as the paramount concern of public speakers and popular writers? First of all, there is the *equity* or *equality* theme — the idea that children throughout Canada, throughout a given province and, more recently, within a given local jurisdiction — should be treated equally, in terms either of access to adequate schools, of dollars spent, or even of some measure of educational output. This theme also stands behind concern for taxpayer equity — the belief that equal tax effort should result in equal dollar availability per pupil for education. It is this equity theme that has sparked such concerns as the federal equalization payments to the provinces, percentage equalizing and power equalizing as provincial school grant mechanisms, full provincial funding as adopted in New Brunswick and Prince Edward Island, and concern for vertical equity in the case of students who are atypical in terms of abilities, home environment, or geographical location. It was partly a concern for equality of educational opportunity that fuelled the strong movements of the 40's and 50's towards larger units of school administration that culminated as the seventies began in the formation of such units in Prince Edward Island. It was the equity theme, too, that led to the assumption by province after province, or by a provincial central agency, of the function of assessment of real property. (In five of the ten provinces assessment is no longer a local function.) Further, it has pushed the movement towards tax reform in such provinces as Ontario, Newfoundland, New Brunswick and Manitoba.

While at one time this equity theme demanded only that no province, no school district, no student fall below certain desirable levels of educational attainment and expenditure, in more recent years it has also begun to demand that no province, school board or student be permitted to rise above certain levels of expenditure and achievement. In other words, where once we were primarily concerned with filling in the valleys in the trend-line of per-pupil expenditure, there is also concern in some provinces with levelling off the peaks as well.

Equity-type grants assume many forms. (Jefferson, 1980) For instance, per pupil grants (flat) are equitable to the extent that educational needs and costs are the same from school district to school district. Obviously, this is not the case and, therefore, differential "need" grants are needed such as those for compensatory education and special handicaps whose incidence levels are not distributed evenly. Examples of differential "cost" grants" are for small schools, declining enrolments, and isolation.

The demand for equity, and hence, equality of educational opportunity, continues to be a strong movement nationally, provincially and locally as evidenced by major fiscal equalization programs, particularly at the national and provincial levels.

Efficiency Theme

A second major theme that weaves its way through the fugue of education finance is that of efficiency: the idea of getting the most educational value for each dollar spent — if not necessarily in pure economic terms, then certainly in terms of public perceptions. There are many innovative ideas that have emerged in the past two decades with this theme: program budgeting, (Duke, 1972) zero-base budgeting, provincial controls on school-board spending, calls for greater accountability — of the provinces to Ottawa for their educational subsidies, of school boards to ministries of education, and of schools to the local school administration. The short-lived United States experiment with performance contracting was carried out in the name of efficiency. These are pretty obvious examples of the operation of the efficiency theme, but there are others which are not so obvious. Part of the push for voucher systems in the United States is caused by a belief that competition in the delivery of educational services will result in great efficiency. The same is true with respect to school-site budgeting. Efficiency in the delivery of educational services was a major component of the centralization-of-schools movement as well as of the larger-unit-of-administration movement. It is a major argument for the retention of the property tax as the local tax for education, since the high visibility and wide distribution of this tax contributes to accountability. It is efficiency that powers the demand that school costs decline as enrolments decline.

Liberty Theme

The third theme is called by Garms, Guthrie and Pierce (1978) the liberty theme. It expresses itself in the slogans "freedom of choice" and "grass-roots democracy". Lawton (1979) maintains that this theme has been stronger in the United States than in Canada, but that the equity theme is stronger in Canada than in the United States. He attributes these facts to the political climate at the time the two countries were formed and received their greatest influx of European settlers. However, there seem to be strong indications that the liberty theme is growing in importance in Canada and may well become a major force in the eighties. Some of the outcomes of the operation of the liberty theme are: the quest for alternative schools within the public system, public support for private schools, and voucher systems. These require greater di-

versity in educational provisions. Then, too, there is school-site budgeting, the call for more participatory democracy, for greater parent and ratepayer control of what schools cost and what goes on in them. This theme is paramount in the arguments about centralization versus decentralization of educational administration and finance.

Periodically the liberty theme was a component, along with the efficiency theme and the equity theme, in the drive for larger school boards and larger schools. The Hope Commission in Ontario (1950) stated that there was a paradox, that in order to achieve greater decentralization of education it was necessary to centralize the administrative structure. This idea was supported by many educators, including this one. The argument went like this: "In order to achieve any meaningful decision-making with respect to education at the local level, it is necessary to have units of administration large enough to employ supervisory and specialist staff so that real powers can be delegated from the Province to the boards."

Conflicting Themes

It is obvious that too much emphasis on equality will restrict the freedom to choose — not least of which is the local community's freedom to choose the level of educational services it wants to support. On the other hand, too much emphasis on freedom of choice and autonomy will conflict with the efficiency theme as well as lessening the amount of equity.

It is equally obvious that the arts of school governance and school finance must constantly weigh these sometimes conflicting themes and try to keep them in balance. The problem posed by change is that the balance must be continually re-achieved as one or other of the three themes gains prominence for a time over the others, probably because it has been being neglected in the immediate past.

There is, of course, a fourth theme: that of political acceptability, which overrides and mediates the other three. Only as much equity, efficiency and responsiveness and choice as is politically acceptable at any time can be achieved.

Educational Technology

Razavi (1978) conceptualized educational technology as an economic approach to the micro and macro planning of education. Working from this premise, I will attempt to illustrate the applicability of such an approach to three financial themes — equity, efficiency, and liberty. Though these themes intertwine, for our present purpose they will be handled otherwise.

Equity

The term equity implies that every child is treated equally in terms of access to adequate schools, of dollars spent, or of some measure of educational output. Furthering the achievement of this idealism through the use of educational technology has been a challenge not easily met by the technologist. For instance, the generalization of effective techniques from one educational setting to another have often been found to be limited.

But functioning even within this limitation of the application of educational technology, the possibilities of using technology to advance the present state of education are vast. No longer must geographic distance be a barrier to equality of educational opportunity. For example, towns of less than 5,000 in rural Mexico were not being served by regular secondary schools thus leaving a group of people neglected by the school system. With the aid of television, the regular secondary curriculum was brought to groups of students effectively expanding their educational opportunity. This one illustration shows how systems connected to a central machine can permit groups of users to work interactively with a single program even though they are widely separated geographically. The gap is becoming even more narrow as the move towards the use of educational satellites permits the delivery of an educational message in the form of a visual and audio presentation wherever the location. Hence, equality of educational access, if not equality of educational opportunity, is forcing policymakers at all levels to take another look at the role of technology in education. It is becoming increasingly apparent that the educational needs of the 1980's cannot be met satisfactorily by traditional delivery systems, particularly in non-urban settings.

A cautionary note, however: This potential use of educational technology may be hampered if educational technologists insist on taking a business approach entirely; i.e., productivity, unit cost without qualitative measure. With such an approach, schools will find themselves channeling students in the direction demanded by business interests. In so doing, educational options in some situations are effectively limited and the cultural irrelevance of education is increased.

Efficiency

Thus, with improved computer power eliminating distance as a physical and economic barrier to the access of education, the question of the cost-effectiveness of such a move must now be examined.

Technically it is now possible, through the implementation of video projection devices and giant screens, to have a computer teach an entire class in manner similar to a lecturer but with the added advantage of student response and feedback. Though we have not advanced to this stage for one reason or another, other situations have indicated that the application of technology to education is cost-effective. Examples of such situations are:

1. Dade County, Florida performance contract project implemented a technology based program which allowed class size to increase from 25 to 40 students per teacher. (Blaschke and Sweeney, 1977). Despite the additional technology, the cost per pupil was actually lower than before the introduction of the program.

2. Kiel and Spitzer (1977) found that the cost per credit hour for a media supported course was $8.07 as compared with the cost of $28.55 for the conventional calligraphy course. The saving of $20.48 was attributed

solely to the use of the media.

3. Kielt and Spitzer (1977) in comparing the development and operating costs of a media supported project with a conventional course offering, which reached the same number of students, established a savings of $9,289.50 over six semesters.

4. Braun (1979-80) stated that schools were able to connect to the district's time-sharing system for $700 (the cost of terminal rental and telephone charges).

5. Labreche remarked in the *Financial Post* (March 8, 1980) that the high costs (approximately $10,000 for a fully equipped student terminal including video unit) and limited course material is presently not compatible with school budgets. However, Eastwood (1978-79) reported that though the courseware costs are high the hardware costs are not. The hardware costs of an "intelligent videodisc" is only $30 per student per year whereas the conventional teaching of reading is $78 per student per year. Furthermore, costs are low enough that district-level amounts of financial support are not required.

The technological issue, then, would appear to center around the number of students who need access to the computer, maintenance requirements, qualified personnel needs, instructional design features required, and the author languages needed. And, the cost of a system involves the purchase or lease price, cost of developing courseware for use by students and teachers, maintenance cost, operating cost, amortization period (for equipment purchases), and the threshold of cost, that is, how much are administrators allocating for computer support of their educational programs.

If technology is to be developed to something approaching optimization, there must be national, or at least provincial, control of development. This is necessary because of the very high front-end software development cost. As well, equipment must be designed to be compatible. Until such time as programs can be developed and run on any machine (as is now the case with LP records, for example) technology will make slow gains. The national (or provincial) agency must: establish equipment specifications, press for programming language and formating standards, and coordinate development of educational communication networks capable of delivering or transporting information from centre to centre and user to user.

In view of these current deficiencies it should not be surprising that non-computer-assisted instruction still overwhelmingly dictates the type of instruction found in public schools. The resulting large gap between this actual implementation of computers into the public schools and the existing potentiality appears to be the consequence of three broad reasons — economic, educational and technical.

Looking only at the first of these reasons, we find that the focus must be set on determining the following:

1. Whether the relative advantages of the computer outweighs traditional methods.

2. Whether less expensive means are available to effect the same instructional gains by computer.

3. Whether technological advances have reduced the costs to a point where school districts can implement computer-based instruction.

Though each question can be answered affirmatively, historical precedent seems to be delaying further application of education technology. However, with no growth data to justify budget increases, administrators will be looking more positively towards technology. With this change, the proven cost-effectiveness of educational technology will likely become more widespread.

Liberty

Three aspects of the "liberty" theme either surfaced or became stronger in Canada during the seventies. One was the quest for greater choice in the selection of schools, which of course meant a great diversity in available schools. A second dimension was the increased concern of neighbourhood groups and parents in matters concerning their own neighbourhoods. This latter concern was confined to urban centres and initially to non-educational matters. But the seeds are there for the demand for greater participatory democracy in education — something we once had in rural and small-town Canada and recently manifested in the "resurgence" of the community school concept.

The concern for greater consumer choice was made possible by declining enrolments which meant that all places in all schools were no longer fully occupied. This meant that open-school policies became feasible. Most Canadian provinces already had one form of consumer choice available — that based on the Catholic/non-Catholic dichotomy. But this operated fully as a choice mechanism only in Ontario and to a lesser extent in the Maritime provinces and Alberta — and then only for adherents of the Catholic faith. The other two manifestations of this drive were the expansion of publicly supported private schools and, in urban areas, of alternative schools in the public system.

A third dimension of the liberty theme was the concern for individualization of learning. In addition to all the other things that technology can do, it will enable teachers to be more professional. Stakenas and Kaufman see the new role of a teacher as tutor-advisor/diagnostician and problem solver. The new functions for a teacher would include:

1. Individual diagnosis of the requirement of each student.
2. Personalized curriculum prescription.
3. Motivation of students.
4. Facilitation of an individual student's learning activities.
5. Evaluation and feedback of each student's progress to assure continuous learning.

There are obvious implications for technology in these three dimensions of the liberty theme, namely, greater consumer choice, greater community involvement and more individualization of learning. In the final analysis only through technology can these three competing variables be accom-

modated without substantial violation of the efficiency principle.

There are a number of factors that militate against educational technology rising to its full potential at the present time. These include barriers such as inadequate teacher preparation in the area of technology, failure of governments, trustees and teachers to grapple with the issue of substituting capital for labor, and inadequate or inappropriate school facility designs. There is also a need for more educators who are computer literate. Moreover, educators who have entrepreneurial skills and can actually shape the way technology will be used in education are at a real premium.

Edington (1978) puts the problem in another perspective:

> ...we have three disparate factions: media-men, economists, and traditional educationalists. The planners and decision-makers have to weigh the arguments put forward by these factions. Which should they listen to? What mix of quantity, as represented by the mass media, should there be with quality, as represented by the classroom teacher and the extension worker? The debate is always much more complex than this crude simplification. There is, however, a common element which all planners now have to deal with. That element is finance. No matter whether a society is following a neo-classical or Marxist economic policy or any mix of the two; no matter where it is located in the World Band classification — be it a Low-Income Developing Country, a Capital Surplus Oil Exporter or even a Centrally Planned Economy, the spending of money on educational communication is a continuing, increasing but still imperfectly developed function.

One might add a fourth faction, namely, the political dimension. Since education is at best a soft science with only limited application of cost-benefit and cost-effective equations, there is a strong need for political leadership in this area. A combination of economic restraint and social demand requires that major decisions regarding the application of educational technology to education be initiated and fostered by government. Additionally, for educational technology to expand within the public school system, three conditions will have to be continually met. These conditions are:

1. examples of use of high educational quality
2. compelling evidence of cost-effectiveness
3. proof that the system works in actual school settings.

The themes or principles of equity, efficiency and liberty will provide a supporting environment, or even a rationale for political leadership in educational technology and that time is either here or around the next turn.

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W.R. Duke is the Director of Finance, Statistics and Legislation for the Alberta Department of Education.

Producing, Viewing and Projecting Three Dimensional or Stereoscopic 35mm Slides

Harold D. Stolovitch and Serge Berthelot

During the late nineteenth and early twentieth centuries, stereoscopic photography became a popular pastime. Many households possessed stereoscopic viewers. As photography became more sophisticated, however, and color and motion photography came within most people's reach, stereoscopic viewing soon died out. At present, aside from children's toy viewers (e.g. view master) stereoscopic photography has become a "lost art".

Stereoscopic photography simulates three dimensionality. It does not resemble the hologram which offers true three dimensional images through the very delicate and costly procedures of holography. The results of stereo photography can, however, be quite dramatic and when well done, separate fore and background sufficiently to provide a plausible representation of three dimensionality.

What is exciting about producing stereo or 3-D slides in full color is that the procedure is neither complex nor costly. Where instructional objectives require three dimensional viewing, this makes 3-D, 35mm slides an attractive alternative.

The purpose of this brief article is to help the reader produce his/her own 3-D or stereo slides. It is divided into two major parts: producing 3-D slides and viewing/projecting 3-D slides. As you will no doubt quickly notice, projection provides a few more problems than does either producing or viewing. This article also contains some sample illustrations of 35mm 3-D slides.

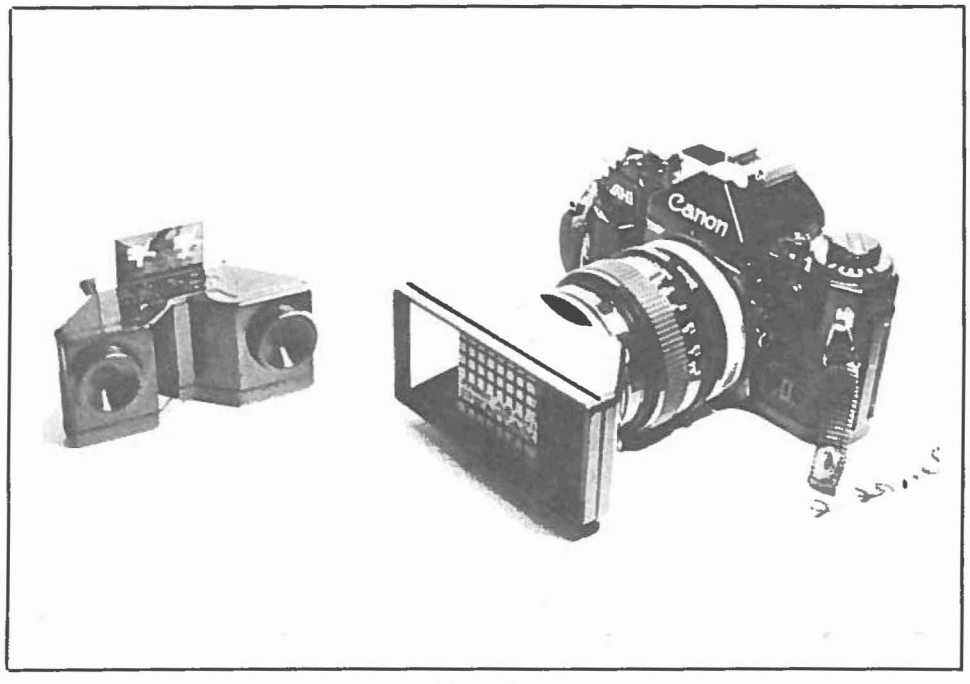


Figure 1

Producing 3-D Slides

You can produce 3-D slides with virtually any good single lens reflex (SLR) 35mm camera. (Of course other camera formats can be used, but we limit ourselves in this article to the popular 35mm). To do this, here are a number of steps to follow:

1. Obtain a small stereo photography adapter set from almost any major photography supplier. The set contains the stereo attachment for the camera and an individual stereo slide viewer. Asahi or Honeywell offers a reasonably good quality stereo adapter set at a cost of about fifty dollars. (See Figure 1)

2. Since the stereo adapter may not exactly fit your camera, check with the camera shop for the difference in diameter between the camera lens and the adapter. Purchase an adapter ring that will fit both the attachment and your camera.

Once the adapter is attached, take pictures just as you normally would with the following precautions:

a) Use large openings (e.g. 1.4, 1.8, 2.0, 2.8) as much as possible. Smaller openings increase depth of field and create a sharper demarcation line between each of the stereoscope images. At *f11*, the demarcation line becomes a solid black band several millimeters wide. Figure 2 shows the differences obtained from large and small openings.

b) Because most SLR cameras have a curtain that moves at a fixed speech (usually one sixtieth sec.) across the film plane regardless of the shutter speed at which you set your camera, objects moving parallel to the film plane register at slightly different times on the two images of your stereo slides. Registration of the moving object is thus thrown off relative to the rest of the image. You must, therefore, try either to slow down the moving object or bring the angle of the object relative to the film plane as close to 90° as possible.

c) Take all photographs with the camera in a horizontal position. Other angles lose the sense of realism. In the vertical position, unless photographing an object at great distance, the slide becomes too narrow to contain sufficient information for two good images.

d) Do not photograph subjects at too close a range. (Minimum recommended distance = 60cm.). If you get in too close, the object being photographed may partially or even totally disappear from one of the images.

3. Using other stereoscopic attachments, it is possible to modify the stereo or 3-D effect. Through *hypostereoscopy,* the stereo effect can be reduced thus allowing you to photograph closer subjects. With *hyperstereoscopy* the stereoscopic effect is increased or exaggerated. You can use hyperstereoscopy to heighten the dramatic effect of depth or increase separation (e.g. to ensure that two mountains several miles away are separated and seen as two distinct mountains, one further than the other).

4. Process stereo slides exactly as you would normal slides.

Viewing/Projecting 3-D Slides

Whereas producing stereo or 3-D slides

poses very few problems and demands little additional equipment, projection of these slides does requires special materials. The following provides practical information on viewing and projecting the 3-D slides you produce:

1. For individual viewing, use the individual stereo slide viewer that comes with the stereo adapter. Adjust the viewing lenses to your eyes. Keep them both at the same angle to the center of your slide. Use a strong but diffuse back light to heighten clarity and detail.

2. When there is more than one spectator, you have to project your stereo slides on a screen. Here is where we run into some difficulties since each person must only see *one image per eye.* To accomplish this, spectators must wear polarized (or anaglyfic — red and green) lenses of the sort 3-D movie theatres used to give to its customers. With polarized lenses, all colors are retained. The Foster Grant Company still produces these inexpensive glasses.

3. For projecting your slides you need a good quality and well-calibrated slide projector — nothing special, just one that is in proper working order. The lens should be particularly good and both clean and clear. Replace the ordinary projector bulb with a high intensity one.

4. Several special pieces of equipment are required for 3-D projection:

a) Four high quality mirrors (approximately 15 x 20 cm). These mirrors should not have their reflecting surfaces covered by glass. (The glass covering causes ghost images.) The type of mirror we are referring to here is of the same quality as the ones found in SLR cameras. The mirrors must be adjustable to any angle.

b) Two adjustable polarizing filters (minimally 10 cm wide, either circular or rectangular).

c) A metallic screen that can retain polarized light.

5. Project a slide and position two mirrors about seven to ten centimeters in front of the lens. (See Figure 3). Face mirror surfaces outward so that they form a 90 degree angle relative to the center of the projector light beam, thus splitting the projected slide images right and left.

6. Place polarizing filters as close as possible to each mirror surface (as in Figure 3) so that the reflected light on each side

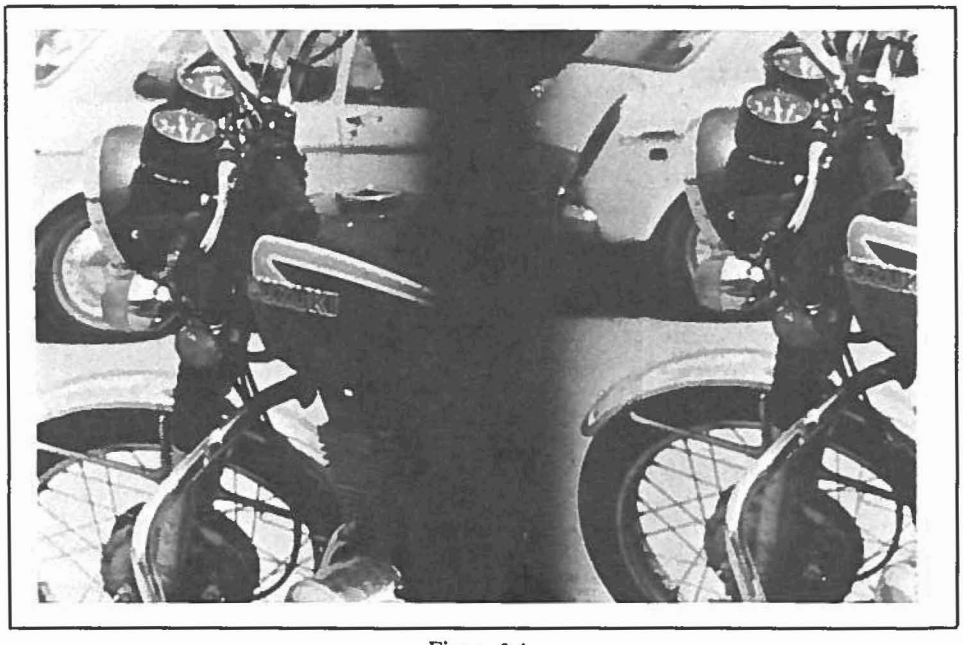
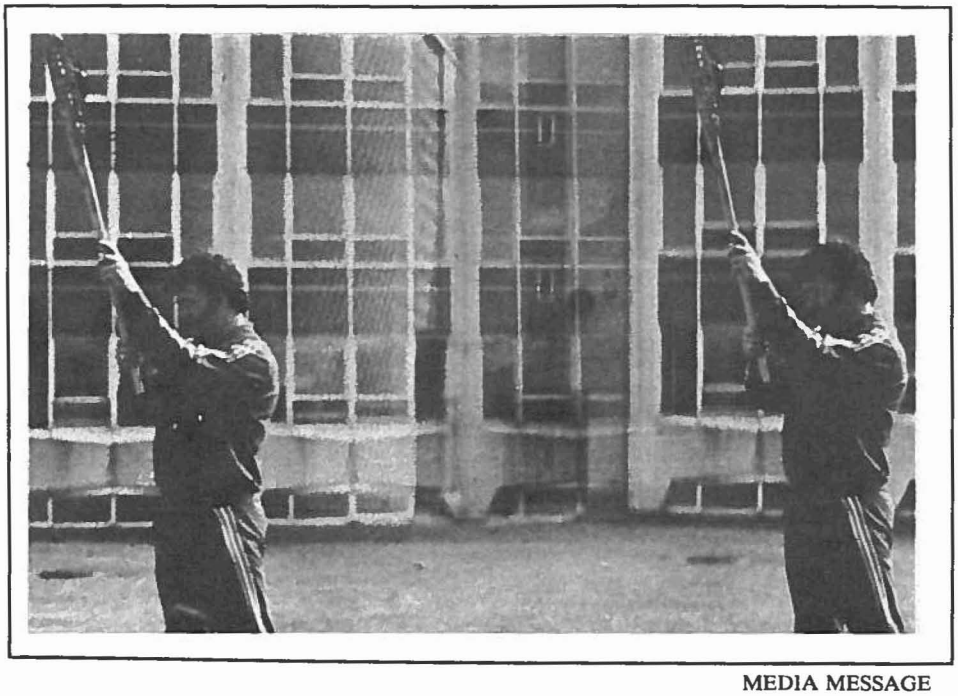


Figure 2 A

Figure 2 B



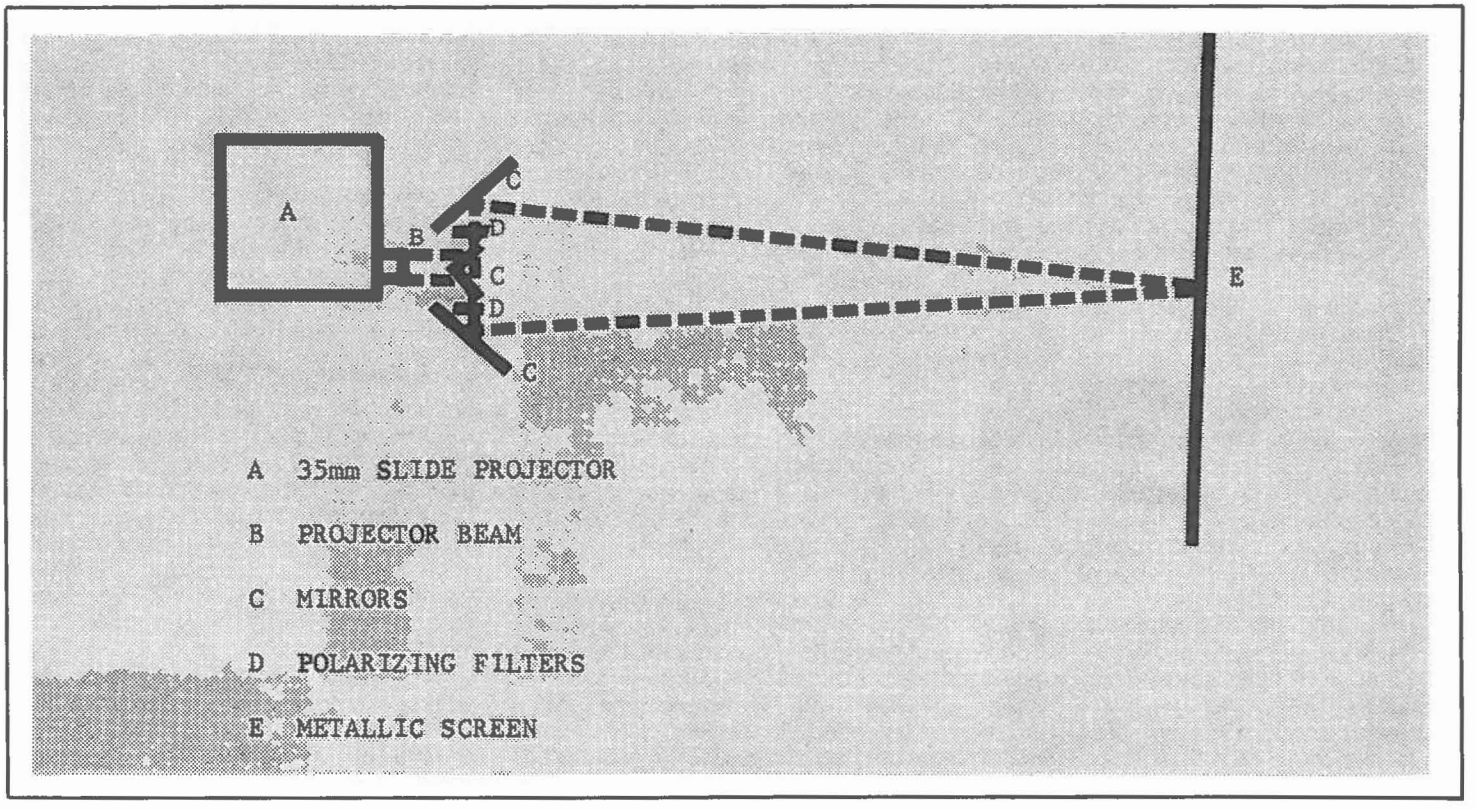


Figure 3

passes completely through the filters.

7. Place mirrors as close as possible beside each polarizing filter and angle them to capture the reflected images and then beam these on to the metallic screen. The angle of these second mirrors will vary with the distance of the screen to the projector (the greater the distance, the wider the angle).

8. Adjust all mirrors and filters as well as the screen to gain optimal clarity and registration. It is interesting to note, however, that even if the images are slightly off, each eye, perceiving only one image, will internally re-register the images.

Conclusion

Although, as this brief article points out, producing and projecting 3-D slides is not overly complex, extra time, compared with 2-dimensional 35mm slide photography, is still required to obtain maximum quality. You should therefore only attempt making depth perception and figure-ground separation than can be obtained by ordinary means; because you want to experiment.

Taking good stereo pictures, preparing the ideal projection environment, obtaining mirrors, filters and polarizing glasses for viewers and insuring perfect projection can all be done if the project is worthwhile. "Worthwhile" is the key word.

As a final note, most of the special apparatus is relatively easy to obtain. The stereo adapter and viewer are not expensive and are available through large camera dealers. Metallic screens are often standard equipment in large industries and colleges. Polarizing filters and high quality mirrors can frequently be found in high school or college physics laboratories. The polarized glasses are somewhat more difficult to obtain locally. You may have to deal directly with a company such as Foster Grant.

All in all, little use is made of 3-D slide up a 3-D slide set for two reasons: because your instructional objectives require greater viewing in training and education. The research literature is relatively silent on the subject. Got an appropriate situation? Got some time to experiment and a small budget to work with? Three-Dimensional, 35mm slide projection might be just right for you.

Harold D. Stolovitch is Associate Dean for Research, Faculté des Sciences de l'Education, Université de Montréal.

Serge Berthelot is a professor at the University of Quebec at Montreal.

Rôle de L'Education dans les Mass Media

Maurice Fleury

Confronter "Education" et "moyens de communication de masse" c'est poser le problème de la liberté, de la rationalité, de la culture en regard de l'illusion, du rêve et du conditionnement. C'est aussi se demander si l'homme n'a pas été dévoré par la machine.

Notre propos, ne se veut ni philosophique, ni intellectualiste, mais réaliste. Il se veut une tentative d'introspection et d'analyse afin de jeter un éclairage particulier sur le débat.

Education

Sans entrer dans des définitions savantes, disons que le terme recouvre quatre entités étroitement reliées: de la connaissance (sur soi, sur les autres, sur son environnement, sur son passé. . .), de la décision, de l'action et dé la rétroaction ou expérience. Ajouté à cela la nécessité d'une démarche personnelle visant un continuel dépassement de soi et vous en obtenez le portrait robot.

A noter que même si l'acquisition est personnelle, le partage et la communication avec autrui sont indispensables. Dans pareil cas, les techniques de masse ou mass media ne devraient-ils pas jouer ce rôle éminemment important d'intermédiaires, de traits d'union favorisant de ce fait la compréhension et le rapprochement entre individus?

Les mass media

Une telle fonction sociale, pour importante qu'elle soit et que des porte-paroles autorisés des techniques de masse affirment être assumés par leurs services, présuppose que les mass media se définissent effectivement comme des moyens de communication entre individus. Or pour qu'une communication s'établisse il faut qu'il y ait au moins deux ingrédients: une source qui émet un message et un destinataire pour qui le message est conçu. Les deux ingrédients ou entités doivent de plus interagir l'un envers l'autre.

Un véritable moyen de communication ce n'est donc pas un outil qui détient un monopole mais un instrument qui favorise le dialogue entre parties d'une société.

Que s'est-il donc passé pour que des outils si merveilleux sujets à unir les membres d'une même société et à rapprocher les sociétés entre elles perdent le cap de l'essentiel pour se complaire dans les croisières du superficiel?

Pour y répondre adéquatement, il faudrait revenir sur chacune des étapes qui ont marqué, l'évolution de nos media, ce qui outrepasse nos propos.

Néanmoins, pour bien comprendre le problème d'incommunicabilité actuelle entre la société et ses media il importe de dégager les significations emprisonnées dans les concepts en cause.

La masse

La sociologie comtemporaine nous a habitué aux expressions: société de masse, culture de masse, consommation de masse, communication de masse.

Il y a peu de temps encore on utilisait le mot "masse" au pluriel seulement (les masses) et il servait à désigner des foules inorganisées.

Aujourd'hui "la masse" se définit par un ensemble d'individus anonymes pouvant compter sur des organisations représentatives pour entreprendre des mouvements de pression.

Bien que disposant de certains leviers de pression, l'élément majoritaire de la masse ne s'en prévaut pas; elle demeure retranchée dans un immobilisme sécurisant.

Les "techniques de masse" pour leur part, se caractérisent surtout par:

1. une centralisation croissante de la production, entrainant du même coup une concentration du pouvoir entre les mains d'un petit nombre; c'est gros, c'est lourd, c'est imposant et personne n'ose s'en approcher;
2. et l'unidirectionnalité de sa communication.

Le consommateur averti peut, il est vrai, rééquilibrer le gîte en s'abonnant à trois quotidiens au lieu d'un, en vérifiant les compte-rendus d'informations sur toutes les chaînes, il s'essoufflera vite s'il n'est pas *jogger* de calibre olympique.

La masse est gourmande, non gourmet. Son appétit est insatiable. Elle fait bombance de tout ce qu'on lui présente au menu et ce dernier est établi par les cotes d'écoute ou le tirage. En visant le "goût moyen" d'une audience la plus large possible, on nivelle celle-ci, c'est-à-dire, que l'on aboutit à ce que les sociologues américains appellent une "mid-culture", voire une culture de masse.

La culture de masse

La culture de masse se caractérise par une simplification à outrance et une singulière uniformisation des points de vue. L'intoxiqué des mass media perd peu à peu son emprise sur la réalité. L'expérience vue à la télé ou lue dans un livre de poche devient l'expérience vécue. L'imaginaire se confond avec le réel, le héros avec le "voyeur". Le danger de la "massification" est manifeste. La consommation frénétique des produits standardisés obnubile puis engourdit pour finalement démobiliser l'individu. L'homme ressent ainsi de la peine à redevenir créatif, à innover, à participer. La médiocrité rôde.

Gourevitch (1976) traduit bien la situation inconfortable mais rarement contestée de l'homme moderne soumis au bombardement constant des media: "Mitraillé par les spectacles du monde, confronté sans préparation à tous les témoignages, prisonnier d'une vision fragmentaire et sommé de vivre par procuration, l'homme occidental est continuellement menacé d'implosion". Le stress nous menace.

McLuhan (1968), pour sa part, tente d'expliquer l'ambiance surchauffée de notre civilisation en se référant aux niveaux de températures de dégageant imperceptiblement de chaque medium: medium chaud (photographie, radio, cinéma) et medium froid (livre, téléphone, télévision).

Un medium chaud, comme la radio, dans une société froide (peu alphabétisée) comme l'Afrique par exemple, peut conduire à une effervescence d'idéologies pouvant mener à la révolte de la masse. Dans une civilisation chaude (très alphabétisée) comme la nôtre, un medium froid favorise la démobilisation.

Selon Tchakhotine (1952), socialiste allemand, la caractéristique des mass

media est de solliciter l'homme archaïque. Simplificateurs, bruyants, hypnotiseurs, les techniques de masse ramènent l'homme des siècles en arrière.

Dans *La foule solitaire,* David Riesman (1950) soutient que l'homme moderne ne reçoit plus son éducation de sa famille mais de ses pairs — à l'école, parmi ses amis, dans ses associations professionnelles, etc. — en somme de tous ceux qui sont branchés non sur la tradition mais sur le mouvement. Cet individu est, selon Riesman, totalement "extro-déterminé" et, dans son désir de recevoir une formation qui soit majoritaire, il se tourne avidement vers la publicité, la presse, la radio, la télévision, le cinéma, à la fois détenteurs et créateurs des valeurs qui ont la cote.

L'homme contemporain est donc, sinon entièrement déterminé, tout au moins marqué de façon indélébile par les mass media. Il lui revient d'en sortir revalorisé ou totalement abruti!

Vers une communication véritable

Ou c'est l'osmose parfaite entre le fantasme et la réalité, ou une contre-offensive est menée afin de réétablir une véritable communication entre émetteurs et destinataires. A la verticalité, à l'unidirectionnalité du message est opposée l'horizontalité ou les échanges entre égaux; aux conférences se substituent les tables rondes; aux élites s'ajoutent les ouvriers, les manoeuvres . . .; à l'ambiguité succède la compréhension: à la passivité, la participation.

Pour peu que l'on y regarde de près nous sommes peut-être pas aussi loin de cette nouvelle ère des communications où chacun serait à la fois source et récepteur d'informations et de cultures.

Déjà des réalisations telles que TEVEQ au Saguenay-Lac Saint-Jean, le projet Multi-Media, Société Nouvelle à Montréal, et plus près de nous le projet Saskébec démontrent éloquemment les possibilités d'une prise en main par le public de leurs moyens de communications.

La télévision communautaire

La télévision communautaire peut s'avérer l'antidote par excellence pour lutter contre l'abrutissement possible par les chaînes commerciales. L'encouragement à la participation ne peut que contribuer à la formation d'une conscience locale, régionale et nationale. L'enrichissement personnel rehausse le niveau de créativité et favorise le développement d'une culture humanisante. L'ère des self-media pointe à l'horizon. Mais la maîtrise par l'homme de ses moyens de communication exige une éducation et des efforts soutenus.

Cette éducation doit se faire, à notre avis, sur deux plans importants:

1. d'abord sur le plan psycho-social, en favorisant l'ouverture de l'un au problème ou à la réalité de l'autre;
2. puis sur le plan de l'expression, en démystifiant la technique, en la mettant á la disposition des individus.

The Role of the Mass Media in Education

The mass media have a definite role to play in educating people. If education can be viewed as communicating information about oneself, about others, about the environment and about the past, then the mass media should be able to assist in this task.

The mass media aim a centrally produced message at an insatiable audience. The communication is essentially one-way leaving no room for response from the audience. Community television may provide the opportunity for genuine communication between people using the mass media. The author maintains that the media must become more open. It is suggested that people will have to be allowed access to the media and that technology will have to be demystified so that it can be used.

La place future des media

Les spécialistes affirment que les techniques modernes de masse modifieront aussi radicalement notre société que la fit la révolution industrielle et l'automobile. Tout autour de nous fourmillent les sollicitations tacites et les invitations formelles, saurons-nous discerner ce qui a un sens à ce qui est insignifiant, ce qui est une valeur sûre à ce qui n'est que clinquant? N'allez pas voir là une négation du besoin de détente, de rire, de divertissement, chez l'homme moderne bousculé par la trépidance des évènements. Ne vous méprenez pas non plus, en cherchant une quelconque opposition entre ce qui est proprement éducatif et ce qui est divertissement. Là ne réside pas la véritable différence! La véritable différence se trouve en chacun de nous, en notre perception de nous-même, de notre rôle dans la société, et en son devenir. Les mass media ne reflèteront que ce que l'on veut bien y projeter de nous-même; elles sont un miroir qui réfléchit notre double. Saurons-nous nous y reconnaître?

Puissions-nous ne jamais nous rendre aussi loin que cette mère de famille qui, répondant à une voisine en admiration devant la beauté de son nouveau bébé s'exclama: "Bah! ce n'est rien, si vous voyiez sa photo!

References

Gourevitch, J.P.; La psychologie de l'audio-visuel in l'audio-visuel de la théorie à la pratique, *Encyclopédie du savoir moderne,* Retz, 1976, *361,* 380.

McLuhan, M; *Pour comprendre les media.* Paris: Mame, 1968.

Riesman, D.; *La foule solitaire.* New Haven: Yale University Press, 1950.

Tchakhotine, S.; *Le viol des foules par la propagande politique. Paris: Gal*limard, 1952.

Maurice Fleury est Professeur agrégé, Department de technologie de l'enseignement, Université Laval, Québec.

AMTEC TIMES

AMTEC '81

Steppingstone to N.S.

Truro, Nova Scotia, site of this year's AMTEC conference, is a quaint mixture of 19th and 20th century culture. Fanciful Victorian homes with gables and garrets abut modern brick and glass architecture. Stores, small enough for personal service, are matched by large shopping malls. Indeed, the city, with its 13,000 people, is small enough to combine the graciousness of another century with the conveniences of the present.

Academic Institutions

Nova Scotia Teachers College has its campus on the outskirts of Truro. Modern brick buildings house the hundreds of prospective teachers. An ultra-modern resource centre with specialized sections for computers, library and journal collections, and television viewing, is the focal point of the college.

Nova Scotia Agricultural College in nearby Bible Hill offers a variety of theoretical and practical farming courses. Visitors are welcome to tour the stables of horses, and view the herds of cows, swine, sheep and poultry.

Just For Fun

Victoria Park, a 1,000 acre city park, is a magnificent natural playground. It has numerous footpaths wandering over the wooded area — some provide a glimpse of the picturesque waterfalls inside the park.

Adjoining Nova Scotia Teachers' College, the site of AMTEC '81, is an Olympic-size swimming pool This will be open to all conference participants at specified times.

Road to Sea

Halifax, capital of Nova Scotia and the oldest city in the Atlantic Provinces, is a short one-hour drive to the sea. The city offers a variety of interesting activities for visitors.

Historic Properties, a waterfront restoration project, allows you to enjoy 19th century Halifax. Warehouses, restored to the stone and timber of their origins, house old world shops and restaurants. The Bluenose II, a replica of the famed racing shooner, is tied up on the wharf ready to ferry passengers around the harbour.

An excellent view of the city is obtained from the Halifax Citadel, a hilltop fortress built in 1828. This military station contains three museums and offers a fascinating 30-minute slide-sound show on the Citadel's history.

For just relaxing, visitors should follow the scenic paths in Point Pleasant Park. This woodland park borders the ocean and provides clear views of the busy harbour: container ships docking at the nearby port, sailing ships in the Basin, oil tankers speeding up the channel.

Universities

Halifax can also boast of five well known universities: St. Mary's, University of King's College, Dalhousie, Mount St. Vincent and Nova Scotia Technical College. Obviously the number of institutions combined with their diversity of resources is a mainspring of the city's cultural life. For interest, AMTEC visitors should tour the impressive chapel at King's College, the modern Izaak Walton Killam Memorial Library at Dalhousie and the International Education Centre at St. Mary's.

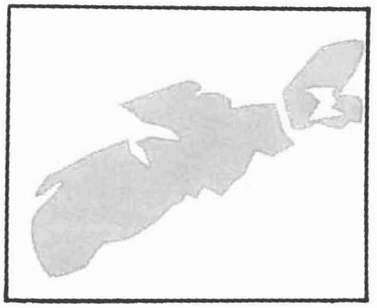
North to Northumberland

Conference participants who wish to explore the warm water beaches of the Atlantic should travel north to Pictou.

Pictou is only a short drive from many beautiful white-sand beaches: Melmerby Beach, Heather Beach and Caribou. Part of the charm of this area lies in its unspoiled nature. The beaches are seldom crowded and offer lots of sparkling clean water.

Settled by the Scots in 1767, Pictou has retained much of its highland character. Gray stone cottages, nestling close together on the hill overlooking the sea, closely resemble the crofters' homes in the Hebrides.

For museum buffs, the Thomas MacCulloch House and the new Hector National Exhibit Centre, are just outside Pictou. These museums provide an insight into the area's past and a view on the future.



Welcome

The Maritimes are rich in culture, diverse in people and a sharp contrast to the more urbanized areas of Canada. While you are here attending AMTEC '81, we hope you have time to enjoy our country and culture.

Dr. Pérusse Opens Truro Conference

Dr. Pierre Perusse, professor agrege from the University of Montreal, will discuss "Beyond the Oral Tradition" in the keynote address at AMTEC '81.

Dr. Perusse, a noted researcher and former director of the Department of Educational Technology at the University of Montreal, will consider the impact of today's technology explosion on our learning tradition. As the current chairman of the NRC Subcommittee on Guidelines and Priorities for Research and Development in Technology Resources for Instruction, he should have many interesting insights.

Concurrent Sessions

Three concurrent sessions are planned for Monday, June 22 and two concurrent sessions are planned for Tuesday, June 23 and Wednesday, June 24. These sessions will pose a variety of topics including multi-image communication, audiovisual standards, producing slide-tape programs, and using radio to teach parents.

Dick Epp and Mick Ellis from Saskatoon Board of Education have proposed a 90-minute presentation on "Message by Multi-Image." The presentation will emphasize multi-image as a technique to communicate information in the educational sector.

"Equipment Standards and Audiovisual Environments" will be discussed by A.J. Powell from McGill University. This program includes an explanation of standards as well as a review of Mr. Powell's report to the Prague Conference '81 on audiovisual environments.

Dr. C.Y. Oh, professor of secondary education at the University of Alberta, will provide his listeners with "Tips on Producing a Quality Slide-Tape Program." Using a variety of audiovisual equipment, Dr. Oh will give a step-by-step explanation of planning, writing and producing a slide-sound show.

Parent education using radio will be the topic under consideration by Wanda Young, professor of home economics at the University of Saskatchewan. Dr. Young will provide the results of a survey on radio use in parent education, as well as recommendations for future radio use.

Closing Address

The wrap-up speech will be given by David MacDonald, former Minister of Communications and Secretary of State. Currently a Fellow in Residence at the Institute for Research on Public Policy in Ottawa, Mr. MacDonald will give us an incise view on the technological implications for the political situation.

After Dark

Evening activities for AMTEC '81 include a lobster buffet, a scenic tour of Halifax and an authentic Maritime pub featuring the folk group, Barley Bree.

Media Festival

The annual Media Festival recognizing top Canadian educational media programs will be held concurrent with the conference. This festival features all types of recent audiovisual productions: slide-sound, film and video. The programs are shown continuously throughout the conference.

Exhibits

The latest, up-to-the-minute developments in media technology will be exhibited by commercial organizations throughout the four-day conference. Among the many exhibitors are Computype Services, Sony of Canada, Elmo Canada, Califone Industries and Bell and Howell.

"Beyond the Oral Tradition"

President

Anne Davidson

After Christmas blues! Little wonder, with scarcely any funding left in the current budget and frantic justification underway for program support in the next. Hold the line! Resourcefulness and resilience must surely be the critical factors in our survival.

As the potential of new technologies receives acclaim one wonders if we are living in an either/or society, the new versus the traditional. The task must be to merge the two and encourage co-existence. Somewhat topsy-turvy is the scene: costly exploration of the capability of technology, software scramble, the plight of the Canadian producer, the rate of attrition evident in the ranks of media personnel.

"We have a crisis," writes Les Modolo, president of Marlin Motion Pictures in his *Report on Funding,* November 1980, to members of his association, the Educational Media Producers and Distributors Association of Canada. According to STATSCAN, district level sales declined from $9,487,000 in 1975 to $9,317,100 while building level sales declined from $8,299,000 to $5,352,300 during the same period. Significant indeed.

In the Winter issue of this journal, my message concluded with the observation that we must be ready to muster forces for cooperative projects. Well, the challenge is at hand. According to Les Modolo one organization or association tends to operate without sharing information with others who have similar interests.

So that an opportunity may be provided for an examination of the information and identification of the problem, an invitation was extended to Les Modolo to speak to his paper at the meeting of the AMTEC Board of Directors February 12. Ted Monkhouse, president of the Canadian School Library Association, also attended. A possible outcome of this discussion may be a *Funding Seminar* at AMTEC '81 in Truro when AMTEC members including members of EMPDAC will be able to take a serious look at funding for non-print media and to determine a course of immediate action on a national level. Surely everyone will agree with Les Modolo's statement, "We don't need anymore five-year long studies and surveys. The evidence is there. All of us in media should not only be concerned but be willing to do something positive to change the funding situation."

Funding for acquisition of imported materials, funding for media personnel and funding for Canadian productions are perhaps the areas to be examined.

Some time ago the observation was made that AMTEC may be too conference oriented. If conferences were ends in themselves this might be true. However, it seems that a major strength of our association lies in the annual conference and the influence it has on generating development, especially true when one considers special interest groups. An ongoing communication within each group takes place throughout the year; the conference permits interpersonal exchange and charting of direction for the ensuing year.

Equally strong in impact is this publication which continues to attract contributors of particularly high calibre.

Perhaps some thought should be given to getting to know those who have shared their views through *Media Message* articles or who have shown leadership through working in special interest groups. Conference time might highlight their efforts.

AMTEC delegates to AECT in Philadelphia April 6-10 will have an opportunity to get together at the AMTEC breakfast Wednesday April 8. This will be chaired by past-president Ken Bowers. AMTEC will not be sponsoring a delegate to that conference.

Members will be interested to know that Mal Binks, a former president, has agreed to continue as chairman of the Awards Committee.

Cecil Wilkinson, long-time member of AMTEC and recipient of the Leadership Award is presently working on *The History of Educational Media Associations in Canada.* The draft should be ready for presentation by Cec at the Truro conference. AMTEC will be sponsoring his travel to the conference; AMTEC has not approved any fee for the work.

Think ahead to Truro June 21-24, 1981. And if you operate on a five-year plan: Winnipeg, June 1982; Montreal, June 1983; Vancouver, June 1984; London, June 1985.

In Memoriam

Our community has lost a brilliant figure with the passing of Dr. Marshall McLuhan. His unique presence will be great missed.

Editor

Richard F. Lewis

"Beyond the Oral Tradition," the theme for AMTEC '81, has some far-reaching implications for the media field. Certainly the array of audiovisual machinery, computer equipment, and nonbook learning resources points to a definite expansion of educational material; an expansion far beyond the teacher-student oral tradition.

The conference theme, however, has more direct relevance than this superficial observation. It intentionally links the past with its personal approach to education with the future and its technological approach to instruction. The mixing of these two themes: personalism and technology is cause for reflection.

Two of the articles in this *Media Message* provide some insights. Maurice Fleury in "Role de L'education dans les mass media" has given critical thought to the personalism angle. In his comments on the state of mass media, particularly television, Fleury indicates that the medium is essentially non-reponsive. Television, by its programming formats and usage, has eliminated or severely curtailed one essential aspect of the learning process; i.e. the ability to question and comment.

Fleury considers that this non-responsiveness has restricted the possible impact of the media. He suggests that two-way television and more open programming formats should be initiated.

Thomas L. Bennett's article, "A Study to Identify Major Field Techniques and Utilization Levels by Canadian Instructional Developers," reviews the variety of learning approaches currently in use. Bennett's survey lists and defines sixty techniques which may be used in teaching. It provides a comprehensive bibliography in instructional development and promises to provide some user statistics at a later date.

The study, in itself, is a graphic illustration of the expansion in teaching methodology. Interviewing, brainstorming, role playing, flowcharting and story boarding are among the techniques listed. Obviously these methodologies, although utilizing the standard classroom situation, are another dimension in the traditional teacher-student relationship.

It is interesting to note that for these authors and for the AMTEC community, "Beyond the Oral Tradition" is a *fait accompli*. Mass media and its impact on education is a given. It is now the goal to critize the medium to accept the best of past tradition and combine it with the professional of the present to produce the optimal educational environment of the future.

A Study to Identify Major Field Techniques and Utilization Levels by Canadian Instructional Developers

Thomas L. Bennett

As members of the Association for Media and Technology in Education in Canada, many of us are professionally involved with instructional development. Central to this field is the utilization of diverse techniques which have become rooted in education. Of these techniques, many were spawned by instructional developers, while others have been adopted by us from psychology, communications, business and industry, etc.

It is the purpose of the following study to investigate knowledge and application levels of a number of these major instructional development techniques, as they apply to the AMTEC membership. For this purpose, the researcher assembled a list of 108 such techniques, and subsequently surveyed a group of 30 field experts in Canada and abroad. The survey instrument revealed that of the original list, 60 techniques were deemed to be of sufficient value to be included in the final study. It is acknowledged that this list is by no means definitive: a large number of techniques were culled from the original list, which in itself was not exhaustive. However, with this limitation noted, let us proceed; let us make a beginning. The first rung must be mounted before the ladder is ascended.

The researcher would beg your indulgence to consider the present survey. You are respectfully asked to devote a half hour or so of your time and complete the following document that has been printed in the centre portion of this issue of *Media Message*. It may be detached easily and returned to the researcher in the enclosed, addressed, stamped envelope. Further, the following list of alphabetized techniques and their definitions have been included, which may remain with the journal. It is hoped that the accompanying references may be of service to you in your future endeavours.

In conclusion, an analysis of the data and a complete report of the survey will be published in a future issue of *Media Message;* however, strict observance of individual anonymity will be maintained. It is felt that the results will be of significant value to the membership of AMTEC, and for this reason the researcher would like to thank you for your consideration and kind assistance.

Techniques and Definitions

Appraisal Interview

A verbal communication between employee and management concerning the results of an employee appraisal, in order to encourage present behaviour, or to provide a warning for a behavioral change, or to simply provide information.

Kay, E. A Study of the performance appraisal interview. *New York management development and employee relations services.* New York: General Electric Company, March, 1962.

Norman, R.F. Three types of appraisal interview, *Personnel.* March, 1958.

Authoritative Opinion

Descriptive writing based upon the observations of experienced practitioners, or persons who have had direct contact with the environment they seek to describe or explain.

Davis, R.C. *The fundamentals of top management.* New York: Harper & Row, 1951.

Fayol, H. *Industrial and general administration.* International Management Institute, 1930.

Behavior Modelling
Technique to enable managers to improve their managerial abilities by imitating "models" who have mastered the requisite skills.

Bandura, A. *Principles of behavior modification.* New York: Holt, Rinehard & Winston, 1960.
Goldstein, A.P., & Sorcher, M. Changing managerial behavior by applied learning techniques. *Training and Development Journal,* 1973, 36-39.

Bloom's Taxonomy
Psychological model that describes the major categories within the cognitive domain: knowledge, comprehension application, analysis, synthesis, and evaluation. The taxonomy proceeds on the assumption that knowledge is ordered hierarchically, and it is assumed that the six main classes are sequential, moving from knowledge to evaluation.

Gronlund, Norman E. *Stating behavioral objectives for classroom instruction.* New York: Macmillan, 1970.
Hunt, D.E., & Sullivan, E.V. *Between psychology and education.* Hinsdale, Ill.: Dryden Press, 1974.

Brainstorming
Technique that enables a group of people to quickly produce many ideas without fear of criticism. Ideas are recorded first and evaluated afterwards.

Babach, W.J., & Barkelew, A.H. *The Babach-Barkelew brainstorming book.* Utica, Michigan: Synergy Group Inc., 1976.
Havelock, R.G. *The change agent's guide to innovation in education.* Englewood Cliffs, N.J.: Educational Technology Publication, April 1978.

Card Sort
Pack of cards, containing goal statements on each card, is sorted into stacks that have been assigned value points, in order to determine a ranking of goals based upon importance and implementation priorities.

Witkin, B.R. Needs assessment, kits, models and tools. *Educational Technology,* 1977, *17,* 5-18.

Case Studies
A technique involving a comprehensive study of an individual, institution, or situation; used to provide detailed information for purposes of appraisal and recommendations.

Schatzman, L., & Strauss, A. *Field research.* Englewood Cliffs, N.J.: Prentice-Hall Inc., 1973.

Checklists
Technique to enable designers to use knowledge of requirements that have been found to be relevant in similar situations by first preparing a list of questions that were determined to be important in similar situations and next asking some of all of these questions about the design that is to be evaluated.

Jones, J.C. *Design methods.* London: John Wiley & Sons, 1970.

Cognitive Mapping
A systematic procedure for visually indicating how a person approaches new knowledge (cognitive information) in terms of perception, memory, thinking, and problem solving, based on previous knowledge or rules for acquiring new knowledge based on rules derived in learning old knowledge.

Thorndike, R.L., & Hagan, E. *Measurement and evaluation.* New York: John Wiley & Sons, 1977.

Computer Assisted Instruction
Instructional technique in which the computer contains a stored instructional program designed to inform, guide, control, and test the student until a prescribed level of proficiency is reached.

Coulson, J.E. *Programmed learning and computer-based instruction.* New York: John Wiley & Sons, 1962.
Poirot, J.L., & Groves, D.N. *Computer science for the teacher.* Manchaca, Texas: Sterling Swift Publishing Co., 1976.

Computer Search
Computerized technique that enables the researcher to search thousands of articles in a short period of time by the use of key words or descriptors; e.g., literature search.

Thesarus of ERIC descriptors. New York: Macmillan Information. 1980.

Content Analysis
A procedure for identifying intellectual tasks including: the concepts involved in a competency, the relationships among the concepts, the behaviors performed using the concepts and relationships. (AECT definition)

Kerlinger, F.N. *Foundations of behavioral research.* New York: Holt, Rinehart & Winston, 1973.

Contract Plan
A written agreement between the student and teacher which lists a set of goals, skills, and assignments to be completed by the student within a reasonable time.

Haddock, T. Individual instruction through student contracts. *Arizona Teacher,* May 1967.

Cost-Benefit Analysis
A generic term for such techniques as zero based budgeting, cost effectiveness, cost evaluation, etc., which assist the decision-maker in making a comparison of alternative courses of action in terms of their costs and effectiveness in attaining some specific objectives.

Prest, A.R., & Turvey R. Cost-benefit analysis: a survey. *The Economic Journal,* 1965, *75,* 683-735.
Wilkinson, G.L. Cost evaluation of instructional strategies. *Communication Review,* 1973.

Criterion Referenced Measurement
Tests constructed to yield measurements that are directly interpretable in terms of specified performance standards.

Humbleton, R.K., & Gorth, W.P. *Criterion-referenced testing: issues and applications.* Amherst, Mass.: Amherst School of Educa-

tion, Sept. 1971. (ERIC Document Reproduction Service No. ED 60025)
Jones, J.W. *A study of the congruency of competencies and criterion-referenced measures.* Master's thesis from Mississippi State University, 1977. (ERIC Document Reproduction Service No. 142575).

Critical Incidents Technique

Technique to acquire information on specific behavior patterns of a subject by interviewing the subject's work supervisor in order to ascertain behavior patterns relating to the skills being studied.

Borg, W.R., & Meredith, D.C. *Educational research and introduction.* New York: David Mckay Co., 249-251.
Flanagan, J.C. The critical incident technique. *Psychological Bulletin,* 1954, *51,* 327-358.

Critical Path Method

Technique to aid researchers with the planning, scheduling, expediting and progress monitoring tasks involved in a specific project by diagramatically plotting work activities and events in sequence and determining the longest time needed to complete the project.

Collins, F.T. *Network planning and critical math scheduling.* New York: Know How Publications, 1965.

Decision Tables

Alternative to a flowchart for presenting the logic of a problem, wherein the table is a set of decision rules in which each rule identifies a set of conditions with its set of actions; it is divided vertically by *condition statements* and *action statements* and divided horizontally by *stubs* and *entries.*

Hussain, K.M. Development of information systems for education. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1973.

Delphi Technique

A futurist research method which utilizes the systematic solicitation and combination of informed judgments from a group of experts on questions or issues relevant to the future.

Helmer, O. *Analysis of the future: the Delphi method.* Santa Monica, Ca.: The Rand Corporation, 1967.
Melmer, O., & Dalkey, N.C. An experimental application of the Delphi method of the use of experts. *Management Science,* 1963, *9,* 458-467.
Weaver, W.T. The Delphi forecasting method. *Phi Beta Kappan,* January, 1971.

Discovery Technique

Learning model by which the student problem solves through discovering a new method rather than relying upon prior knowledge and procedures.

Taba, H. Learning by discovery. *Elementary School Journal,* 1963, *63*(6), 308-316.
Travers, R.M.W. (Ed.), *Second handbook of research on teaching,* Chicago: Rand McNally, 1973.

Discrepancy Evaluation

A method of identifying the causes of the difference between stated objectives and actual performance. (AECT definition)

Stake, R.E. Objectives, priorities, and other judgment data. *Review of Educational Research,* 1970, *70,* 181-212.

Feedback

Generative term that encompasses a number of techniques (including programmed texts, pull-tab response cards, Latent Image, etc.), which gives the learner an immediate response as to the correctness of his answers. It may also refer to data collected by researchers for purposes of evaluation.

Glaser, R., & Cooley, W.W. Instrumentation for teaching and instructional management. In R. Travers (Ed.), *Second handbook of research on teaching.* Chicago: Rand McNally, 1973.

Field Test

The assessment of a near-final model in an appropriate situation, according to specified criteria, for the purpose of determining what modifications of structure and performance are necessary (AECT definition).

Klausmeier, H. Research and development toward the improvement of education. *Journal of Experimental Education,* 1968, *37,* 146-156.

Flowcharting

Graphic representation for the definition, analysis, or solution of a problem in which symbols are used to represent operations, data, flow, and equipment, etc.

Chapin, N. Flowcharting with ANSI standards: a tutorial. *Computing Surveys,* June, 1970, *2.*
Enrick, N.L. *Effective graphic communication.* New York: Averback Publishers, 1972.
Schiber, T.J. *Fundamentals of flowcharting.* New York: J. Wiley & Son, 1969.

Force-Field Analysis

Graphic method of analyzing the forces providing thrust towards or facilitating change, and the forces hindering change in a particular situation.

Lewin, K. Frontiers in group dynamics: concept, method and reality in social science. *Human Relations,* 1947, *1.*
Giammato, M.C. Suggested activities for learning about role behaviors, problem solving and force field techniques. *Northwest Regional Education Laboratory.*

Formative Evaluation

An attempt to collect appropriate evidence during the construction and trying out of a new curriculum, etc. in such a way that revision of it can be based on this evidence; evaluation of instructional programs while they are still in some stage of development.

Anderson, S.B., Ball, S., & Murphy, R.T. *Encyclopedia of educational evaluating.* San Francisco: Jossey-Bass, 1975.
Bloom, B.S., Hasting, J.T., & Madaus, G.F. *Handbook on formative and summative evaluation of student learning.* New York: McGraw-Hill, 1971.

Function Analysis

In the Roger Kaufman Model for Educational Systems Planning, the Function Analysis stage is the process for determining requirements and subfunctions for accomplishing all of the elements stated in the objectives and problem identification stage. It is concerned with identifying the *whats* that have to be accomplished

rather than the *hows.*

Kaufman, R.A. *Educational system planning.* Englewood Cliffs, N.J.: Prentice-Hall, 1972.

Gagne's Taxonomy

Cognitive learning theory described as a hierarchy of learning processes that become increasingly complex and which places more emphasis upon learning and less on the development aspect.

Hunt, D.E. & Sullivan, E.V. *Between psychology and education.* Hinsdale, Ill.: Dryden Press, 1974.

Gannt Chart

A means of graphically illustrating a production schedule; the horizontal axis is used to depict time, with activities, items, or personnel listed vertically in the left-hand column.

Dessler, G. *Management fundamentals: a framework.* Reston, Va.: Reston, 1977.

Longenecker, J.G. *Essentials of Management: a behavioral approach.* Columbus, Ohio: Charles Merrill, 1977.

In-Basket Technique

Technique to analyze a participant's decision-making abilities, managerial and problem-solving skills, whereby s/he receives a "situation" set up on a memo to which a considered response is compared to answers suggested by field experts.

French, W. *The personnel management process* (4th ed.). Boston: Houghton Mifflin, 1978.

Ward, L.B. The use of business problems. *Management Record,* 1960, *22,* 30-33.

Information Mapping

System of graphically presenting information on a series of pages in the form of COBOL: each page is broken with horizontal lines dividing chunks of information into definitions, examples, rules, etc.

Glaser, R. *Teaching research and education.* New York: John Wiley, 1965.

Horn, R.E. Information mapping: new tool to overcome the paper mountain. *Educational Technology,* 1974, *15*(5), 5-8.

Instructional Analysis Kit

Self-evaluation of instructional procedures as a vital step towards course improvement.

Donald, Janet G., & Penney, M. *Instructional analysis kit.* Montreal, Quebec: McGill Centre for Learning & Development, 1977.

Interviewing Users

Technique to elicit information that is known only to users of a product or system in question.

Jones, J.C. *Design methods.* London: John Wiley, 1970.

Krathwohl's Taxonomy

Psychological model that describes the major categories within the Affective Domain: receiving, responding, valuing, organizing, and characterizing by a value or value complex.

Gronlund, N.E. *Stating behavioral objectives for classroom instructions.* New York: Macmillan, 1970.

Learner Verification and Revision

Involves the concepts of evaluation, revision and decision to implement developed by Kenneth Komoski, and intended for use as an index of quality for educational materials; involves the tryout of a prototype educational product on the target audience to determine its weaknesses prior to revision.

Kandaswamy, S. Learner verification and revision: an experimental comparison of two methods. *A.V. Communication Review,* 1976, *24,* 316 - 328.

Stolovitch, H.D. The intermediate technology of learner verification and revision. *Educational Technology,* 1978, *18,* 13-17.

Likert Scale

To obtain summated ratings of information pertinent to affective variables, by responding to statements which are both favourable and unfavourable to the phenomenon under study; responses range on a scale of five (from "strongly agree" to "strongly disagree") and are thus analyzed to determine which items discriminate best between the high-scoring individuals and the low-scoring individuals.

Phillips, *Social research.* 1966.

Stanley & Hopkins. *Educational and psychological measurement and evaluation.*

Linear Programming

Program in which the sequence of information presented to the students is fixed so that all students are given the same stimuli in exactly the same sequence followed by testing, followed by new information; based upon the stimulus-response works of Pressy and Skinner.

Brown, J.V., Lewis, R.B., & Harceroad, F.F. *AV instruction media and methods.* New York: McGraw-Hill, 1969.

Hartley, J. Programmed instruction 1954-1974: a review. *Programmed Learning and Educational Technology,* 1974, *11,* 278-291.

Literature Search

To find published information that can favourably influence the designers' output and that can be obtained without unacceptable cost and delay.

Jones, J.C. *Design methods.* London: John Wiley, 1970.

Long-Range Planning

Methodology to develop an adaptive planning program consisting of "alternative future" general plans and derivative plans for the major components of the agency in question; methods range from establishing goals, through developing plans for each alternative future, through selecting one alternative future plan and developing monitoring and shifting procedures.

Chase, R.B., & Clark, D.C. Long range planning in school districts. *Educational Technology,* 1974, *4,* 32-36.

Salmon, R.D. Developing a long range planning system for higher education. *School and Community,* May 1971.

Management by Objectives

Process whereby the superior and subordinated managers of an

organization jointly identify its common goals, define each individual's major area of responsibility in terms of the results expected, and uses these measures as guides for operating the unit and assessing the contributions of each of its members.

Hollman, R.W. Applying MBO research to practice. *Human Resources Management,* Winter, 1976.
Stein, D.I. Objective management systems: two to five years after implementation *Personnel Journal,* 1975, *54,* 525-583.

Mathetics

Training system to determine what to teach, a basis for determining strategy decisions, and a detailed procedure for constructing a lesson; those goals are attained through a series of ten steps which include occupational analysis, task selection, task analysis, population analysis, etc.

Gilbert, T.F. Mathetics II: the description of teaching exercises. *Journal of Mathetics,* April 1962, *I.*
Gilbert, T.F. Mathetics: the technology of education: *Journal of Mathetics,* January 1962, *1.*

Micro Teaching

Practice which allows pre-service or in-service teachers to develop or improve skills in applying a particular teaching technique, whereby a lesson is planned which concerns a single, unique topic to be presented to a small group of students, in a small time frame.

Allen, D.W., & Pyan, K.A. *Microteaching.* Reading, Mass.: Addison-Wesley, 1967.
Sadker, M., & Sadker, D. Microteaching for affective skills. *The Elementary School Journal,* 1976, *76,* 90-99.

Multi-Image/Multi-Media Presentation

The integration of more than one medium in a complementary manner in a presentation or module of instruction.

Wittich, W.A., & Schuller, C.F. *Instructional technology, its nature and use.* New York: Harper & Row, 1973.

Needs Assessment

The process in which "real-world" data is collected from individuals and groups involved in a particular educational situation to determine the nature of the problem, to determine how the group involved (learners, implementers, community) value what exists (status quo), what should be (the ideal situation) and the discrepancy between what is and what should be, and to prioritize the problems and discrepancies.

Anderson, S.B., Ball, S, & Murphy, R.T. *Encylopedia of educational evaluation.* San Francisco: Jossey-Bass, 1975.
Witkin, B.R. Needs assessment, kits, models and tools. *Educational Technology,* 1977, *17,* 5-18.

Nominal Group Process

Method to generate and prioritize ideas regarding problem-solving, job performance improvement, etc., whereby each member of a study group generates ideas that are listed before the group, ranked, and valued (1-5), and finally prioritized.

Albanese, R. *Managing; toward accountability for performance.* Homewood, Ill.: Richard D. Irwin, 1978.
Delbecq, A.L., VandeVen, A.H. Nominal group techniques for involving clients and resource experts in program planning. *Academy of Management Proceedings,* 1970.

Observation Interview

Method to define a task, analyze a job, or perform needs assessment or evaluation, whereby the investigator observes and questions an interviewee at the work site while the practitioner performs the activities under investigation.

Anderson, S.B., Ball, S., & Murphy, R.T. *Encyclopedia of educational evaluation.* San Francisco: Jossey-Bass, 1975.
Bergman, A.B., Dassel, S.W., & Wedgwood, R.J. Time-motion study of practicing pediatricians. *Pediatrics,* 1966, *38,*254-263.

Programmed Instruction

A generic term referring to a technique of, and materials for instruction; the process of constructing sequences of instructional material in a way that maximizes the rate of acquisition and retention, and enhances the motivation of the student; instruction utilizing a workbook textbook, or a mechanical and/or electronic device programmed to help pupils attain a specified level of performance. (AECT definition)

Briggs, L.J. *Sequencing of instruction in relation to hierarchies of competence.* Pittsburgh: American Institutes for Research, 1968.
Briggs, L.J. *Handbook of procedures for the design of instruction.* Pittsburgh: American Institutes for Research, 1970.

Program Evaluation Review Technique

A systematic timetabling and programming technique developed to measure, monitor, and control the development and progress of a project or program, wherein a network of events and work activities is identified, including the *critical path* of the one which takes the longest time to complete.

Cook, D.L. *Program evaluation and review technique: applications in education.* Washington: U.S.H.E.W Office of Education, 1966, *17.*
Kohn, M. *Dynamic managing: principles, process, practice.* Melno Park, Calif.: Cummings, 1977.
Lott, D.R. *Basic systems analysis.* New York: Onfield Press, 1971.

Program Planning Budgeting System

A planning budgeting system in which resources are allocated according to specified project or program needs; it directly relates substantive planning to fiscal planning requiring a detailed operational plan to which costs are then assigned on a programmatic, rather than on a line item basis.

Kindred, A.R. *Data systems and management.* Englewood Cliffs, N.J.: Prentice-Hall, 1973.
Magaro, J.D. P.P.B.S.: a means towards accountability. *Audiovisual Instruction,* 1975, *20*(10), 10-12.

Questionnaire

Instrument for recording data ranging from sociological opinions and attitudes to psychological variables which include opinions, attitudes and behavior; technique to obtain responses and reactions from a large number of individuals who could not be interviewed personally within a short period of time without considerable expense.

Bloom, B.S., & Hastings, M. *Handbook on formative and summa-*

tive evaluation of student learning. New York: McGraw-Hill, 1971.

Kerlinger, F.N. *Foundations of behavioral research* (2nd ed.). New York: Holt, Rinehart & Winston, 1973.

Role Playing

Instructional technique involving a spontaneous portrayal or acting out of a situation, condition, or circumstance by selected members of a learning group who assume either overtly or in imagination, the part or function of another.

Cooper, J. Deception and role playing: "On telling the good guys from the bad guys." *American Psychologist,* August, 1976. *31,* 605-610.

Keller, C.W. Role playing and simulation in history classics. *The History Teacher,* 1975, *8*(4).

Sequencing of Objectives

Objectives are sequenced according to a number of different methods in order to facilitate learning.

Popham, W.J., & Baker, E.L. *Systematic instruction.* Englewood Cliffs, N.Y.: Prentice-Hall, 1970.

Posner, G.J., & Strike, K.A. A categorization scheme for principles of sequencing content. *Review of Educational Research,* 1976, *46*(4), 665-689.

Shaping

A method of successive approximation to teach humans and animals a new skill; it reinforces behaviors that approximate the final performance one wants the subject to perform by shaping the learner's behavior by rewarding him whenever he is successful in approximating the skill being taught.

Davis, A., & Yelon, S. *Learning systems design.* East Lansing, Michigan State University, 1976.

Simulation

A learning process which involves pupils as participants in role presentations and/or games simulating real-life situations or environments; a learning activity which makes the practice and materials as near as possible to the situation in which the learning will be applied.

Greenblat, C.S., & Duke, R. *Gaming — simulation: rationale, design and application.* New York: Halsted Press, 1975.

Spannaus, T.W. What is simulation? *Audiovisual Instruction,* 1978, *23*(7), 16-17.

Stake Model

Technique intended for the evaluation of educational programs by providing data for decision-making; it provides measurements on a matrix of the match between what an educator intends to do and what s/he actually accomplishes.

Anderson, S.B., Ball, S., & Murphy, R.T. *Encyclopedia of educational evaluation.* San Francisco: Jossey-Bass, 1975.

Stake, R.E. *Evaluating the arts in education: a responsive approach.* Columbus: Charles Merrill, 1975.

Standardized Tests

An instrument constructed in accord with detailed specifications, in which the items have been selected after trying out for appropriateness in difficulty and discriminating power, one which is accompanied by a manual giving definite directions for uniform administration and scoring, and one which provides relevant and dependable norms for score interpretations.

Borg, W.R., & Gall, M.D. *Educational research* (2nd ed.). New York: David Mckay, 1971.

Buros, O.K. *The mental measurement yearbook.* Highland Park, N.J.: Gryphon, 1977.

Story Boarding

The activity of preparing a series of sketches or pictures and any accompanying text used to visualize each topic or item in an audiovisual material (or presentation) to be produced; usually used for planning.

Kemp, J.E. *Planning and producing audiovisual materials.* New York: Chandler Publishing, 1968.

Brown, L. *A.V. instruction, technology, media, and methods.* New York: McGraw-Hill, 1973.

Summative Evaluation

Evaluation intended to provide data for product validation and oriented to consumer-administration-teacher criteria and standards, used to assess the overall effectiveness of some program of material.

Anderson, S.B., Bull, S., & Murphy, R.T. *Encyclopedia of Educational evaluation.* San Francisco: Jossey-Bass, 1973.

Bloom, B.S., Hastings, T., & Mabaus, G.F. *Handbook on formative and summative evaluation of student learning.* New York: McGraw-Hill, 1971.

Task Analysis

The analysis and synthesis of a real world behavior and/or situation, including knowledge, skills and attitudes, including the following: a listing of the activities performed, an indication of the sequence and relationships among the knowledge, skills, and attitudes, the conditions under which the knowledge, skills and attitudes occur; and the acceptable criteria for knowledge, skills and attitudes performance.

Davis, I.K. Task analysis: some process and content concerns. *AVCR,* Spring, 1973, 73-83.

Gagne, R.M. *Task analysis — its relation to content analysis.* A paper presented at the annual meeting of the American Educational Research Association, Chicago: April, 1974.

Technical Conference

A group of high-level technical or subject matter experts are brought together to collectively determine the responsibilities and procedures of a set position.

Goldstein, I.I. *Training program development and evaluation.* Belmont, California: Wadsworth, 1974.

Segall, Asher, *et.al. Systematic course designed for the health fields.* New York: John Wiley, 1975.

Survey of Field Techniques Utilized by Canadian Instructional Developers

Anonymity and Confidentiality

All information you furnish will be held in strict confidence and reported in statistical aggregates only. No data which will link an individual to specific or general responses will be reported.

Directions

Filling out the questionnaire will require approximately 30 minutes of your time. Most questions can be answered simply by checking the appropriate box. In a few instances you will be requested to make brief written responses.

Please answer all questions whenever possible.

When you have finished, please detach survey forms and return in the enclosed, stamped envelope to:

Mr. Thomas Bennett
Site 3, R.R. 3
Parry Sound, Ontario P2A 2W9

1. Respondent's name (for clarification purposes only)

_____

2. Years of teaching or educational work experience ____

3. Level of *highest* education (check one)

____ B.A./B.Ed./B.Sc.
____ Specialist or equivalent
____ M.A./M.Ed./M.Sc.
____ Ph.D./Ed.D.
____ College Diploma or
____ Other (specify)
____ Certificate (Specify diploma, institution, and Program description)

4. Name of University or College of your highest degree

_____

5. Name of the program of your highest degree if you graduated with one of the degrees in No. 3 above (check one).

____ Adult Education
____ Applied Psychology
____ Computer Applications
____ Curriculum
____ Measurement and Evaluation
____ Educational Administration and/or Planning
____ Higher Education
____ History and/or Philosophy of Education
____ Instructional Development and Technology (Educational Media, etc.)
____ Sociology in Education
____ Special Education
____ Other (Specify)

6. State title or present job responsibility (check one)

____ Administrator
____ College Instructor
____ Curriculum Coordinator or Consultant
____ Remedial Teacher
____ Special Education
____ Audiovisual Technician
____ Librarian
____ Elementary School Teacher
____ Secondary School Teacher
____ University Professor/Instructor
____ Other (specify)

7. Institution/School Board in which you are currently employed.

(a) Approximate Enrollment _____
(b) Faculty Size _____
(c) Name of Institution/School Board (response is optional)
_____

8. In order to identify your level of competency, level of usage, and how valuable you feel each technique is to Instructional Development, please check the appropriate box for each of categories A,B, and C.

Further, *if you are presently employed in a University, College, or Teacher Training Institution* that provides Instructional Development Programs and/or Teacher Training Programs, please indicate whether such programs teach the TECHNIQUE and to what DEGREE, by checking the appropriate box in category D.

Please Note: If you are NOT FAMILIAR with a technique, please check the Nil box in category A and *and go to the next technique;* do not proceed with Categories B through D.

Thank you for your help in completing this survey. Your efforts are greatly appreciated.

Technique Name	A. Competency Level				B. Level of Use				C. Value to Instructional Development				D. Degree to Which Institution Teaches			
	Nil	Hi	Med	Lo	Hi	Med	Lo	None	Hi	Med	Lo	None	Hi	Med	Lo	N/A
Appraisal Interview																
Authoritative Opinion																
Behaviour Modelling																
Bloom's Taxonomy																
Brainstorming																

Card Sort																
Case Studies																
Checklists																
Cognitive Mapping																
Computer Assisted Instruct.																
Computer Search																
Content Analysis																
Contract Plan																
Cost-Benefit Analysis																
Criterion Referenced Measurement																
Critical Incidents Technique																
Critical Path Method (CPM)																
Decision Tables																
Delphi Technique																
Discovery Technique																
Discrepancy Evaluation																
Feedback																
Field Test																
Flowcharting																
Force-Field Analysis																
Formative Evaluation																
Function Analysis																
Gagne's Taxonomy																
Gannt Chart																
In-Basket Technique																
Information Mapping																
Instructional Analysis Kit																
Interviewing Users																
Krathwohl's Taxonomy																
Learner Verification and Revision																
Likert Scale																
Linear Programming																
Literature Search																
Long-Range Planning																
Management by Objectives																
Mathetics																
Micro Teaching																
Multi-Image/Multi-Media Presentation																
Needs Assessment																
Nominal Group Process																
Observation Interview (eg. Time-Motion Studies																
Programmed Instruction																
Program Evaluation Review Technique																
Program Planning Budgeting System																
Questionnaire																
Role Playing																
Sequencing of Objectives																
Shaping																
Simulation (Gaming)																
Stake Model (Evaluation)																
Standardized Tests																
Story Boarding																
Summative Evaluation																
Task Analysis (Task Desc.)																
Technical Conference																

Reviews

J.G. McDonald

Lewell, John. *Multivision,* London: Focal Press, 1980, 251 pages.

Please Note: The author uses the word "multivision" to describe multiple screen/projector audio-visual shows. For the purpose of the review, this technique will be referred to as "multi-image", the more familiar North American term.

Multivision is one of several books written on multi-image during the last few years. John Lewell is an experienced professional employed by Electrosonic, the world's largest multi-image component manufacturer.

In writing the book, Lewell attempts to put aspects of the medium in a perspective that will be useful to both the producer and the user. He begins with an overview of the various formats and applications of multi-image. The central core of the book (chapters 3 - 10) deals with the effective use of the hardware available, starting with the slide projector, the "basic building block", through control systems, programmers, scripting, art work and sound recording. The last two chapters are aimed at the potential user.

Lewell's book is written for the corporate executive, who has the responsibility for production or the contracting of audio-visual presentations. It is a clear, concise review of the state of the art and will take you through all aspects of the production of an audio-visual show, including the installation of permanent display systems.

Although the intended audience is private industry, Lewell tries to attract educators by giving reasons why such presentations should be used in training (page 25). Unfortunately, there is not enough evidence that multi-image has been tested under controlled conditions. Still, invaluable information can be gleaned from the author's discussion of production techniques.

The beginning chapters are full of helpful hints on the proper application of equipment and facilities. Lewell writes about everything from the difficulties of rear projection (cabinet design, ventilation etc.) and other screening methods, to a detailed insight into the range and flexibility of programming devices in current use. The list starting on page 114, could be very helpful to anyone who is in the market for such a system. Since it is an overview of all programming methods with corresponding advantages and disadvantages, it might also be useful to the producer who has to relate to a client any restrictions in sophistication caused by the physical capacity of his programmer.

Lewell's presentation of production technique in chapters 7 - 10, is the strongest portion of the book. Professionals and amateurs alike can use this section to reinforce their skills in scripting, graphics and sound. In chapter 7, he moves beyond a discussion of the mechanical concept of good sentence construction. The basis of a slide production is obviously the still image and these images must be linked together. His discourse on the incorporation of movement, pace and controlled tension into a script reveals the important role a talented writer plays in the overall success of an audio-visual presentation. The other chapters in this portion of the book can be just as helpful in broadening the reader's understanding of the complexities of multi-image production.

Generally, the author succeeds in his efforts to share his expertise and experience in the production and presentation of multi-image programs. There are, however, some shortcomings that may cloud the reader's concept of the value of the book:

1. Economics of hardware acquisition. As stated before, the book is directed to the corporate executive, and most references to money deal only with the budgeting procedures of a production. Unfortunately, few of us are in the position of not having to economize on equipment purchase. Even large North American production houses think twice these days before purchasing the SAV projector, twice the price of the United States made Ektagraphic. The portable screens recommended in the book are presently selling for $600 - $900 each. What Lewell forgot to mention was that many effective, high quality shows have been produced on limited budgets. By failing to comment on the fact that cheaper manufacturing techniques has reduced the price of digital memory programmers to the point of making them available to people and organizations with limited funds, he may be discouraging many people from taking a closer look at the medium.

2. Another drawback is the author's own background. Since he works for Electrosonic, his natural bias for such equipment and related operating procedures tends to leave a gap in the area of production techniques. Almost every multi-image system is different and while Mr. Lewell's book is most helpful to producers familiar with Electrosonic equipment, it could have a reverse affect on a person who is starting to work with Arion, Spindler & Sauppe, AVL or Clear Light product lines.

3. The publisher also has to take part of the blame for some of the confusion. The inside jacket of the book refers to an exciting discussion of the development and use of laser and holography in multi-image. Unfortunately this part of the book does not seem to have made the printing deadline, since it does not appear anywhere in the publication. This, and the poor quality of the illustrations used in the book tend to detract from an otherwise fine effort.

The final restriction is the cost ($34.95 U.S.). Whether the information included in the book justifies the expense is doubtful. Other companies and organizations such as Eastman Kodak have been able to release excellent publications on the topic for a much more reasonable price. If you intend to acquire *Multivision*, it might be wise to investigate the feasibility of obtaining an educational discount.

J.G. McDonald is the Coordinator of Education Media Services for the Nova Scotia Department of Education. He is also coordinating the Media Festival for AMTEC '81 in Truro.

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