A quarterly Review of International Visual Communication Design

Issue number 4, 1972

Price per issue 1 US dollar
Published in London by the International Council of Graphic Design Associations

Contents include
- Relating teaching to what is known about learning
- Creativity: a teachable skill?

National Institute of Design, Paldi: Ahmedabad, India
An American view of British graphic design education
Problems of adult education

Visual communication in East Africa
Designing books that present a visual argument
The myths of art and science
Our collective knowledge
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Introduction
icographic, 4, 1972, pp.1-2

Education is the general title under which might be grouped our various contributions to this fourth issue of icographic.

The concern of our contributors takes one of three specific forms. The first group considers the problems of educating and/or training graphic designers. The second group is concerned with the work of trained graphic designers in the field of education, whilst the third group discusses what might be termed the technology of education and training.

The education of 'graphic designers'.

Visual Communication is the latest title for the profession that is still called graphic design in most art schools, and commercial art by the majority of the lay public.

It is a very young profession. Many of its leading exponents had little or no formal training for the business, they simply invented the job as they went along, altering or expanding their roles as the demand for their services grew.

As a newcomer, Graphic Design was fitted uneasily into the traditional scheme of things. It started life by being thought of as some kind of aberrant art activity. To the artistic elite, of course, it could only be considered as a mediocre, secondary artistic activity, since it was inevitably tainted by both technology and commerce. Graphic Design thus became one of the 'applied arts'; a sub-category of painting, known as 'commercial art'.

Other forms of industrial design such as 'product design' suffered much the same fate. Since product designing involved some consideration of three-dimensional shape problems it could be properly classified as a sub-category of sculpture. In its early days it was known as 'styling' which is still the name that best describes the activity to the man in the street.

But during the last decade, Graphic Design and some of the other industrial design disciplines have begun to move away from the applied arts towards the applied sciences. In graphic design there is now a vigorous minority who are striving to make the business more scientific.

Certainly it could afford to be a good deal more rational, but can it ever become an applied science? And even if it tried, would not the scientific elite regard it as a suspect scientific activity when so many of its findings can only be based upon intuition or plausible reasoning?

Ever since the various industrial design professions came into existence there seems to have been a sort of tug-of-war between the arts and sciences for their control. In Britain, evidence of this struggle is reflected in the various educational systems that have been set up to teach them. Some authorities were clear that
design should be taught in art schools. Other authorities seem just as sure that design should be taught in schools of technology.

Few authorities seem willing, at present, to consider autonomous design institutions as a possible alternative.

As far as graphic design is concerned, the adoption of the neutral term visual communication is a bit misleading. The bulk of the present day graphic designer's work is concerned with advertising. In advertising, the designer functions as a tool of marketing, and his work is concerned primarily with influencing the preferences of consumers.

As a designer who is now involved with the education of future designers, I have to pretend that advertising is an indispensable part of our current marketing systems. I do not, however, have to pretend that I like that fact. Nor do I have to pretend that advertising has anything to do with communication as I understand the word. As Raymond Williams says:

"...the only practical use of communication is the sharing of real experience. To set anything above this in fact quite impractical. To set selling above it may seem normal, but it is really only a perversion to which some people have got used: a way of looking at the world which must be right and normal because you have cut yourself down to its size."

This heretical view is one that is shared, I suspect, by a large number of graphic design teachers. Many of them have come into education, not because they failed as professionals, but because they couldn't work up enough enthusiasm for using their problem solving skills on the kind of 'communication' that is devoted to the continuous praise of many kinds of consumables that might otherwise be selectively resistant. Walter Plata would seem to share this view. He describes the particular problem involved in training visual communicators in East Africa.

In a country where the consumer population totals only 1% of the adult population, there is less need to train designers who are concerned only with, as he puts it, "fairy tales for Mr and Mrs Consumer."

More urgent is the need to train African designers who communicate in a way that is appropriate to the language and environment of their people, and prepared to tackle more pressing problems than sales promotion.

Walter Plata also gives his impressions of the National Institute of Design, Ahmedabad, India, accumulated during a recent visit to this remarkable school.

Al Gowan, Editor of Designcourse, has also been travelling. He has managed to visit design schools and design offices in England, Wales and Ireland. His article was prepared shortly before he returned to the United States and is, as he points out, a preliminary attempt to sort out his impressions following an arduous schedule spread over several weeks.

Graphic communication demands that designers be more than merely good draughtsmen. Jurriaan Schrofer, a designer from Holland, lets us see something of the problems involved in training visual designers.

Although most of these works were produced in response to actual commissions, they are part of the designer's output that the client seldom sees. They are the "finger-exercises" that help him to extend and project his future range of possibilities.

Graphic design for education

Education in the more industrialised countries has been slow to react just to the needs of the twentieth century. In Europe and America, many authorities are suggesting that present day educational modes of thought are inadequate. They maintain that many educational practices are based on philosophical premises that are no longer self-evidently true and, as a result, are out of harmony with the needs of the individual and society as a whole.

In pursuit of its aims education still ignores important aspects of the human personality - the worlds of the senses and the emotions. It has also tended to overvalue ways of thinking which depend on language for their expression. Education is still too often a process of training future personnel to manage, maintain and expand existing technological societies, so it is not surprising that it has tended to view art education as irrelevant to its major aims.

Increasingly, however, it is being conceded that art education might have a functional contribution to make to general education.

Kurt Rowland, a designer and teacher, has already made a notable contribution to the resolving of some of these problems. He has written a book and designed two sets of books that form a means of providing courses in visual education. The first of these, Looking and Seeing, is already well known and has been welcomed by teachers in many countries. The second, Listening and Reading, appeared in 1968 and offers a basic course in visual education consisting of five textbooks, each with a workbook and a teacher's book.

In his article, Kurt Rowland discusses the particular difficulties of designing educational programmes for adults. His views have relevance to anyone teaching a school of art and design. Too often, he observes, it is assumed that adult education is just like children's education, only more so. He believes that there are very important differences that need to be recognised if teaching is to be effective.

Tom Warren, an American psychologist and researcher, asks whether it is possible to teach people to be creative.

The word 'creativity' is, unfortunately, often a vague, evaluative term. It can be used in connection with almost any human activity of an artistic, scientific or inventive nature, but most people are also aware, when they first encounter the word. Even if the word is used in a vague way, everybody seems to think that creativity is important. It is frequently asserted that the quality of our community life, or even our country's economic survival, depends on the proper fostering of creative talent. As a result, some scientific investigation has been carried out, in the hope of (1) finding ways of detecting creative potential, and (2) devising teaching methods that will successfully develop creative ability.

Tom Warren provides a scholarly review of the present state of investigations into this important question. He concludes that the various creative thinking techniques which have been tried are not likely to dramatically transform design education. Nevertheless, given the dearth of educational ideas within the design schools, such methods deserve serious attention.

My own article describes my attempts to identify student attitudes concerning the arts and the sciences. The reasons for my interest grew out of my discovery that many students in design schools shared stereotypical views of science and scientists; art and artists. Since problem-solving is itself derived by technical motivation, the attitudes which a student brings to his chosen area of study will tend to predetermine his chances of success.

More importantly, perhaps, the way in which a student perceives himself often determines which of his mental gifts he feels free to display.

Executive Editor

Letter to the Editor

Dear Sir,

Would you please allow me the space to thank all contributors to whom the credit for icographic 3 must go. May I also use this opportunity to point out the great difficulties under which a publication relaying professional and scholarly ideas, such as icographic, is edited and produced.

In particular, whilst I wish to apologise to the contributor who complained about technical shortcomings in the reproduction, I must state that those contributors who were not adhered to the dates agreed between us, themselves considerably aggravated the difficulties of production once the agreed schedule was breached and breached again.

To ask contributors to supply a brief synopsis of their article is a practice accepted by many serious publications. To take it for granted that they will actually produce the synopses as well as the translations is not entirely fair, and it is itself derived by technical production. In the interest of the Executive Editor and all future Guest Editors, please let us adhere to delivery dates and supply synopses for translation - including, if at all possible, one or both translations!

Ernest Hoch

Guest Editor icographic 3
Creativity: a teachable skill?

T F Warren

In 1950 a watershed of sorts was reached in the investigation of creativity. J. P. Guilford, in his farewell address as president of the American Psychological Association, strongly urged psychologists to study this intriguing concept. Several years later, a corollary of Guilford's suggestion was articulated by Harold Harding at the Annual Creative Problem Solving Institute on the University of Buffalo campus. Harding stated:

"American Higher Education is, I regret to say, oriented more towards critical thinking than creative thinking. We produce critics rather than artists, or poets or inventors in the broad sense of these magnificent words. Our ... students far too often grow up in an atmosphere of skepticism, of indecision and doubt, and of strong negative conditioning (1962, p4).

The situation has not changed much in the past decade. Although more research has been done regarding creativity concepts, few classrooms have reaped tangible benefits either in thinking techniques can be applied to school disciplines traditionally associated with creativity, such as art, dance, cinema, literature as well as to disciplines such as history and mathematics where creativity is not usually thought of as an important factor.

Perspectives for studying creativity

Some people regard the process of creativity as hallowed ground outside the scope of organized investigation. According to such a view, creativity mustn't be tampered with, and somehow will be contaminated if studied. Others see a need for systemized research and proceed via several different approaches.

One such is the operational approach. Creativity is defined by reference to tasks and techniques which elicit or teach methods for producing new and useful ideas. Gordon (1961, 1969), Osborn (1963), Parnes (1962a, 1962b), and Crawford (1954) have been most active in initiating the development of the main creative thinking programs which are just beginning to be appreciated and studied by educationists. Creative thinking techniques are being applied to problems and procedures for producing new combinations of ideas.

(Davis, 1969, p340)

Regardless of which methodological or conceptual approach is preferred, creativity seems to involve two ostensibly opposed characteristics. On the one hand is something akin to organization, lawfulness, predictability, order, planning, nurture, and science. On the other, one finds play, fantasy, intuition, mystery, nature and art. Bruner (1962) was talking about a similar dichotomy in his "right and left hand" analogy. The right hand is lawfulness, order, geometry, and taut implication; the left is sentiment, fantasy and intuition. Hunches are sometimes tamed by shifting them from the left hand to the right hand.

In assessing the historical development of creativity conceptualization, Gordon (1961) also alluded to two quite different factors.

"The traditional nineteenth century view of the nature of creativity places heavy emphasis on the fine arts and poetry as the 'only' creative expression. This view asserts the primacy of individual genius in such a way that all human creative experience is hustled into the dark limbo of personal mystery. The twentieth century view of creativity is bifurcated into, on the one hand, a mysterious personal element that cannot be understood and, on the other, some rationalization that may be tested for and taught to anyone". (Gordon, 1961, p8).

A related question that arises when dealing with operational or forced creativity is the use of identifying techniques such as brainstorming) involves their relationship to intuitive, primary/natural creativity. One might ask, "is this artificial creativity equivalent to the real thing?" A final answer is not available since too little research has been done to make a definitive statement. Several investigators, however, do give qualified support for the idea that much similarity exists between the two realms. For instance, Mason (1960) and Arnold (1962) felt that training in conscious, learnable creative thinking techniques will result in increased levels of creativity. Conscious effort will stimulate, awaken and strengthen one's creative potential. Osborn (1963) and Parnes (1962) observed that the elements of creativity may very likely be a first step to utilizing one's creative potential. Davis, Manske and Train (1967) noted that

many creative thinking techniques were first suggested by very creative people. It may be that their "natural creativity" is well represented in the operationalized processes that are currently being taught in college and professional creative problem solving courses.

Techniques: a rationale for their existence

Bruner (1964) takes a strong stand in arguing for the important role of techniques in the development of intelligence.

"... the development of human intellectual functioning from infancy to such perfection as it may reach is shaped by a series of technological advances in the use of the mind. Growth depends upon the mastery of techniques and cannot be understood without reference to such mastery. These techniques are not, in the main, inventions of the individuals who are 'growing up'; they are rather skills transmitted with varying efficiency and success by the culture..." (p11).

Bruner goes so far as to suggest that the principal evolutionary change in man "has been alloplastic rather than autoplastic. That is to say, he has changed by linking himself with new, exter-implementation systems rather than by any conspicuous change in morphology..." (p11).

Referring specifically to creative intelligence, Guilford (1962) suggested:

"Like most behaviour, creative activity probably represents to some extent many learned skills. There may be borrowings from these skills by heredity; but I am convinced that through learning one can extend the skills within these limitations". (p188)

Davis (1969) noted the teachable nature of creative attitudes, abilities and techniques. Attitude may be defined as "learned, emotionally toned predispositions to react consistently, favourably or unfavourably, towards persons objects or ideas" (Klausmeier and Goodwin, 1966, p343).

A positive attitude towards novel ideas is important to creative development, and several creative thinking programs and strategies purposely seek to develop such attitudes, eg, Osborn's (1963) brainstorming; Covington, Crutchfield, and Davies' (1966) Productive Thinking Program; Mims and Terrance's (1964, 1965a, 1965b, 1966a, 1966b) Idea Books, and Davis and Houtman's (1968).

There are many reasons why creative abilities are usually thought of as unlearned, according to Guilford (1962) they possibly can be strengthened. He suggested giving students exercises similar to the tests used to measure creative ability. Practice in such basic abilities as remembering, free-associating, discovering problems, being original and flexible, perceiving relationships, imagining and elaborating on wild ideas, plus others, is provided in the Myers and Terrance Idea Books and in the Covington, Crutchfield and Davies program.

Techniques: descriptions and research

Attribute listing

Crawford (1954) defines the attribute listing technique succinctly by saying, "Each time we take a creative problem solving step we do it by changing an attribute or quality of something, or else by applying that same attribute to some other thing (1954, p6). "Thing" here is broadly conceived, including technological, literary, musical, and artistic materials.

Brainstorming

Brainstorming is a technique especially suited to group participation. Brainstorming sessions have long-term and short-term goals. The long-term goal is the solution of an important problem. In the short run, however, the goal is the production of a large number of ideas which may have potential value as solutions Osborn (1963, p156) lists four basic ground rules of brainstorming:

1. Criticism is ruled out
2. "Free Wheeling" is welcomed
3. The wilder the idea, the better; it is easier to tame down than to think up
4. Quantity is wanted

The greater the number of ideas, the more the likelihood of useful ideas.

Combination and improvement are sought

In addition to contributing ideas of their own, participants suggest how ideas of others can be turned into better ideas; or how two or more ideas can be joined into still another idea.

The most important yardstick of brainstorming's success has been its wide acceptance as a useful tool for generating ideas.

Synectics

Several techniques may be classified under the heading of synectics. The word is derived from the Greek "synectics" which means the "joining together of different and apparently unrelated ideas" (Gordon, 1961, p3). The conscious use of metaphor is a key to the synectics
process. Aristotle (Poetics, in Butcher, 1951 translation) noted that artists recognize the value of “giving a thing a name that belongs to something else”. Gordon extends this process and maintains that metaphorical thinking can be taught.

After more than 20 years of experience with teaching and refining metaphor-based creativity concepts, Gordon (1969) stated:

“...the most important element in the creative process is 'Making the Familiar Strange', because scientific breakthroughs as well as visual and literary innovations depend on strange new contexts by which to view a familiar world.” (p3).

Gordon described three operational mechanisms, each metaphorical in character, for 'Making the Familiar Strange', all of which provide a non-rational, playful, stimulating atmosphere. They are Direct Analogy, Personal Analogy, and Compressed Conflict.

“Direct Analogy is a simple comparison of two objects or concepts” (Gordon, 1969, p17). English teachers might include “metaphor” and “simile” under the rubric of Direct Analogy, e.g., "The wind blown sand bit at our faces," “The wall was rough as a gardener’s hand,” respectively. Gordon noted many examples of how Direct Analogy stimulated discovery in science.

Brunel developed the concept of the caisson by noting the boring of the tiny bones of the ear. Many basic nuclear theories are a clear comparison with an astronomy model (p17).

Personal Analogy is a description of how it feels to be a particular animal or object. It involves empathizing with other things, the more completely, the better. Gordon (1969) identified levels of involvement in Personal Analogy from superficial recitation of the overtly obvious to strikingly uninhibited success in “becoming” the object in question.

He noted some scientific discoveries that seem to suggest the use of this technique. For example, “the great Dutch chemist Kekule … in attempting to solve the riddle of the molecular construction of benzene … imagined himself to be a snake swallowing his tail. This Personal Analogy led to the concept of the molecules being set in a circular pattern” (p23).

Also, Dr T A Rich, a scientist with over 100 patents involving electricity and electronics, “puts himself in the middle of a problem, trying as he says, to ‘think’ like an electron whose course is being plotted, or imagines himself (to be) a light beam whose position is being measured” (p23).

Compressed Conflict, the third synectics technique for 'Making the Familiar Strange', is “a poetic, two-word description, on a high level of generality where the two words don’t seem to fit and sometimes actually contradict each other” (Gordon, 1969, p24).

Examples might include “imprisoned freedom”, “velvet strength”, and “nourishing flame”. Compressed Conflict has similarities to the other synectics techniques, of course, since they are all metaphorically based. However, the surprising factor is at its highest intensity with this technique. On the other hand, Compressed Conflict provides the most insight into a problem. It is, however, the most difficult to use.

Examples of Compressed Conflict in science include Cajal, the Nobel prize winning developer of the neuron theory, who referred to the "protoplasmic kiss", and the vaccine developer Koch, who began a series of experiments with a "safe attack" (Gordon, 1969, p26).

Bionics

Bionics is a design engineering concept with many similarities since it involves investigating the "structure, function and mechanism of plants and animals to gain information for analogous man-made systems" (Bionics, 1963).

It is a way to "study basic principles in nature and emerge with applications of principles and processes to the needs of mankind" (Papanek, 1969, p6).

The number of inventions and improvements that can be traced to the study of analogous structures, functions and mechanisms in nature is very large. The eye of the frog helped develop an electronic property filter which suppresses certain phenomena, whilst allowing others to pass. Beetle’s eyes have suggested improvements for advancing film in aircraft cameras. Moths’ and bats’ ears have aided in developing radar anti-jamming devices. The European warbler (which navigates by sun during the day and by the stars at night) has been studied to help improve navigational procedures. The low friction properties of whales and porpoises have suggested improved propulsion systems for small craft. In earlier days, birds were closely studied by aspiring aviators, and other natural phenomena suggested man-made levers and wheels. Papanek notes a difference between early designs and inventions and those exemplifying modern bionics.

"Whereas we may consider the first hammer an extension of the fist and the first rake a type of claw, bionics today is less concerned with the form of parts or the shape of things than it is with examining how nature makes things happen, the interaction of parts, the existence of systems ... If the Industrial Revolution gave us a mechanical era (a static technology of moveable parts), if the last sixty years have given us a technological era (a dynamic technology of functioning arts), then we are now emerging into a biomorphic era (an evolving technology permissive of imitation)" (Papanek, 1969, p6).

MorphologicalSynthesis/Analysis

Next we turn to a technique which is at the other end of the playfulness-simulation spectrum. Davis (1971) defines morphological synthesis/analysis as follows:

“One first identifies two or more dimensions (or attributes) of the problem ... Second, one lists ideas for each of these dimensions ... Finally one evaluates the huge number of all possible combinations”.

From the tremendous number of ideas produced by such combination, most will be useless. However, a few may be quite promising, themselves, or may inspire a related idea.

Attribute listing works best with very specific problems while use of morphological analysis should deal with generic and basic matters.

The morphological analysis technique involves stating the problem as broadly as possible and also defining the dimensions broadly.

Free Association Technique

This technique was developed in the tradition of stimulus-response oriented experimental psychology. Its behavioural origins have been articulated by Maltzman, Bogartz and Berger (1958).

Maltzman’s basic originality training procedure involved giving persons the same training list of words several times and requiring them to give different verbal associates each time. The list was presented. This ostensibly forced the subjects to respond more originally, as the number of presentations increased. Maltzman found this tendency seemed to transfer to test lists (Maltzman, Bogartz and Berger, 1958; Maltzman, 1960).

However, several other studies have noted less than clear-cut results.

Checklists

Another idea-finding technique is called the checklist method. Davis (1971) writes:

"the checklist strategy simply amounts to examining some kind of 'list' which could suggest solutions for a given problem" (p91).

“List” is broadly conceived and can include such diverse sources of ideas as: deliberately constructed hints; the yellow pages of telephone books; want ads; dictionaries; Thesauruses; department of hardware store catalogues, and, the most inclusive of all, “the things around us”. Like other creative techniques, checklist functions the user to draw from sources that are very available, but not obviously relevant to a given problem.

Although some research has been undertaken to investigate the checklist procedure, see Carlltide and Krauser, 1963; Davis and Roweton, 1968; Davis et al, 1969; Roweton, 1969; Torrance, 1961; Train, 1967; and Warren, 1970) results are something less than conclusive.

Conclusion

Laboratory research attempting to learn more about creative thinking techniques is just beginning and is sometimes inconclusive. Reports from industry, although not formulated in experimental parameters, consistently support use of creative thinking techniques where product improvement is needed. Educationalists who value idea production should keep a watchful eye towards developments regarding these techniques. Entire “creativity” courses or smaller units within existing courses could be implemented in schools where there is no conscious effort to encourage the production of original or useful ideas.

The distinction Abraham Maslow (1968) has made between “Special Talent Creativity” and “Self-Actualizing Creativity” is useful when discussing idea generation in an educational setting. Special talent creativity refers to the situation in which an extremely capable individual has produced a product which others think is original or useful.

“Product” is broadly conceived and need not be tangible.

Self-actualizing creativity, on the other hand, is characterized by an increased awareness or broader perspective in a growing person. This type of creativity can become operative in virtually anyone.

For persons who possess special talent creativity creative thinking techniques could be cumbersome and get in the way of their
“natural” creativity. It must be noted, however, that such persons through testimonials regarding their own thinking processes, have been instrumental in developing creative thinking techniques (Davis, Manske and Train, 1967).

For many other persons strategies such as creative thinking techniques may be quite useful. The techniques can be catalysts for generating new perspectives and products, or education, but it will be interesting "natural" creativity. It must be techniques will not provide the "panacea which magically transforms such as creative thinking techniques (Davis, 1969).

In any event, there is not a surplus of good ideas emerging from our schools. Creative thinking techniques will not provide the panacea which magically transforms education, but it will be interesting to give them a try. So far this has not been done.

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Footnote*
Both terms, "morphological analysis" and "morphological synthesis" have been used to label this concept. Some writers (eg Osborn) use the former, while one of the inventors of this method, Allen, prefers the latter. The present writer will use "synthesis" since it more aptly emphasizes the "joining together" nature of the process.
The Department of Linguistics and African Languages furnished this Swahili translation of visual communication: uelela nija ya kuangalia. Swahili-speaking ayahs, cooks, lecturers, students translated it back into English as demonstration through watching, to know by looking, to get information by way of seeing: useful definitions of a term referring to a rather new activity in East Africa.

Visual communication is an exchange of messages which can be seen. Together with messages which can be heard they make up the bulk of human communication, which (in his On Human Communication) Colin Cherry defines as an activity which establishes a social unit from individuals by the use of language or signs. Communication is the condition sine qua non of an individual's and of a society's survival and development.

The more industrialised societies became, the more they needed efficient communication systems. These they got with audio-visual telecommunication media. But also the aesthetic aspect of visual communication had to perform more efficiently in more complex communication situations. A new professional was needed to plan, to design visual communication.

The graphic designer, trained in a new kind of school, the school of design (or art and design or craft and design). The best known and influential of this type of school was the Bauhaus, which operated from 1919 to 1933 in Dessau, between 1919 and 1932. In all these schools a designer was trained whose ability and capacity rested on intuition, creativity and personal experience, fine qualities which, however, cannot be measured or described precisely. Neither can such a professional's output - his design - be measured and verified precisely. This largely explains why, in 50 years of schools of design and designers no theory of design has yet been written.

For the past 50 years in Europe there has been hardly any communication between schools of design and their graduates, and universities and their graduates. And there was no need for it. Psychology, engineering, mathematics, philosophy, economics, as well as design, were taught and practiced as independent and separate fields, this was visualised also in columns of figures: communicating how many cars, chimneys, among others - were all busy and sold. Scientists, artists, commercial artists, art directors - among others - were all busy developing Mr and Mrs Citizen into Mr and Mrs Consumer. Visual communication was mostly unilateral one-way messages from the producer to the consumer, urging, asking, persuading, selling at high cost. To consume more, to throw away, to buy, to spend ...

The vast majority of people calling themselves graphic designers are still engaged in "designing" this kind of visual communication, called advertising - 90 percent of them, according to the BDG (Bund Deutscher Grafik-Designer), Germany, the oldest professional society of graphic designers. Their training for the design of this kind of visual communication, often to visualise the gaps and gimmicks of sales managers and promotion men, was and is adequate. No advertiser rightly is interested in his advertise­ment as a means to transmit inform­ation as fast as possible, because in 95 percent of advertising no inform­ation is transmitted, if we understand by information an intensity which increases the knowledge of the receiver. If we can quantify what is transmitted in the average variety of advertisements as a special kind of literature, as fiction or fairy tale for Mr and Mrs Consumer, then we may say that the invention of these tales and their presentation to the public is closer to art than to design.

The graphic designer of today who calls this activity "design" should have kept his old designation as commercial artist. Intuition, creativity - if he owns and cultivates these fine yet not precisely measurable qualities - will make his work and himself more successful than if he had these qualities in his blood. He can make a designer find a problem, state, describe and analyse it, programme its solution based on data and the fixed selection of measurable variables, visualise the solution leading to or resulting in the problem's solution. The solution will be a product which fits into and develops an economic and socio-cultural system whose means of production usefulness and beauty are just two. If the product were only to be beautiful, an artist could cope with the task.

The commercial artist, now often calling himself a graphic designer, was and still is successful. With his help in the highly industrialised societies called "recreational" perfect consumer societies were established and are functioning.

In these societies more and more of their members in the last ten years had similar experiences to that of this writer: walking in the main streets of Birmingham, Frankfurt, Gothenburg, Kyoto or Pittsburgh one can yell into one's microphone's companion to communicate with her. Not only the Hudson, Rhine and Thames stink but even the small streams one encounters in "recreational" areas where one spends holidays. In Los Angeles, in Johannesburg, in Berlin the Ruhrgebiet on bright days it suddenly becomes greyish-black: smog, visual communication of societies whose members have highly activated certain parts of their brains but who have lost the ability to reason, who produce as much dirt as soap and consume both.

Recently a change has started to take place in these "developed" countries. Politicians campaigning for mayorships in urban areas promise the voter to return to him what he once owned: the pleasure of walking and talking in the streets and a blue sky above him. Economists stop cherishing the national production and consumption growth as the developed countries' holy cow. Student protest and revolt against education and training inadequate to make them capable of solving problems in a new society in which they no longer want to be powerless specialists and manipulators of consumers. An alarmed and scared public backs very expensive educational reforms and restructuring programmes. Implementing them in Europe, the first schools of design are being integrated with universities.

Against this background of change and reform in education in general and in the education and training of designers in particular, in the so-called developed countries, the first school of design in Africa between the Sahara and the Zambesi was opened. In 1959 a department of Industrial Design was established at the University of East Africa's College of Nairobi, and shortly after renamed the Department of Design. What was then and is still designated visual communication in East Africa - known as commercial art, graphic design, advertising design - was and is mainly imported from Europe and the US and modelled on it. But here press, magazine, film and television advertising is not in thousands of millions of shillings' business as in the Western countries where its halting would probably cause the collapse of those consumer societies. In East Africa this kind of visual communication is directed to a group of consumers totalling up to only 1 percent of the approximately 30 million inhabitants.

No student in the Department of Design should be specially trained to serve this market and group. The artists and craftsmen needed by the agencies handling advertising are more economically trained within the agencies or at a vocational school. At such a school all young people who in East Africa professionally handle a camera, brush, pen and typographical rule could be trained faster and cheaper than for eleven thousand shillings a year at the University. The costly university education justifies the training and education of the designers of visual communication - the relevant programme in the Department of Design is still called graphic design - only if the graduate will be capable of taking part in decision-making at management level. For this he will have to be as qualified a professional as a psycholo­gist, economist, physician or architect. Only within the university can he acquire the necessary knowledge.

Being with the Department of Design from its start, this writer would suggest that such a profession could be produced by it if two major changes were effected: that the present three years of undergraduate studies are intensified into an undergraduate study of four years of three terms each or three years of four terms each, and that candidates must have a principal pass in at least one science subject and may leave art as subsidiary only.

Now the Department of Design normally gets students whose art teachers in secondary school had heard something of commercial art and suggested the study of "design", because the student was rather good at handling a piece of chalk, a brush, a pencil. The problem of the Department of Design is to get the right students and also to get the right staff: a combination of an experienced designer and a teacher, able to tap sources of such relevant knowledge and programme its flow from other departments to the Department of Design which he himself is not qualified enough to transfer to his students.

All the knowledge necessary to make out of the right student a designer is available in this university. This designer of visual communica­tion, a Bachelor of Arts in Design graduating at the University of Nairobi, will depend on and will be the product of successful communication within the university.
Posters used to help in preventing accidents in East African factories are imported. Their design is of low quality and consequently they function badly in their country of origin and worse in East Africa, where the receiver of the messages they transmit lives in a different environment and speaks a different language. In co-operation with the Inspectorate of Factories, Ministry of Works, graphics students in the Department of Design are re-designing such posters. Reproduced here are an imported poster and a stage of re-design by D P Karamu.

Both symbols were designed for the Association of Medical Students, University of Nairobi, to visualise contemporary medical practice in East Africa. The circular shapes, representing pills, refer to modern medicine while the shapes of leaves and horns refer to traditional medicine. G G Kamau and R C Aguma, graphic design students of the Department of Design, integrated these shapes into functional signs, semantically precise and legible down to small sizes.

TRADERS TOLD TO SPECIALISE

TRADERS taking over businesses previously owned by non-citizens have been advised to specialise in trade in order to be successful. The advice was given by the Central Pro vincial Planning Officer, Mr. D. Kungu, when closing a one-week course at the Wambui Farmers' Training Centre attended by 12 traders from Nyeri District.

Above, a cutting (in original size) from the front page of the Daily Nation illustrating the traditional narrow newspaper column.

Aerogrammes of such shape are sold at the post offices in East Africa. As a medium of visual communication or a channel usable for the transmission of information they are badly designed for use in offices. Because of their size/shape the typing of information and the filing and retrieval of the aerogramme by the receiver present problems. This then is an illustration of the need for African designers with the know-how and authority to design more functional aerogrammes.

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The design of this medium of visual communication is based on European beliefs and opinions - sometimes qualified as creativity or intuition. Scientists have proved that this traditional newspaper design causes a considerable reduction in the functioning of this medium. The short line - increasing the number of fixation pauses - the many word breaks, the recurring over-wide spaces between words and the excessive number of words set in capitals all dramatically reduce legibility. A designer of visual communication would say that this type of newspaper is very 'noisy' as a channel for transmitting information. Its traditional design also causes a partial waste of the capacity of the channel, which negatively influences the production costs of the newspaper.
National Institute of Design, Paldi, Ahmedabad, India

Walter Plata

Top, a general view of NID. Below, one of the projects undertaken by the Institute, the design of a Devanagari script suitable for mechanised printing. The Devanagari script is used by the 237 million Hindi speaking people of India. Many of the other scripts used by the various linguistic groups in India are derived from Devanagari. Within the context of a national programme for mass education and improved communication, the development of a Devanagari script suitable for mechanised printing, such as typewriting, typecasting and photocomposition, was vitally important.

The consultant for this project was Adrian Frutiger.

18-3-72. Arriving from the Department of Design in Nairobi, after the junk of Bombay airport and downtown Ahmedabad, for the teacher of design a dream comes true.

buildings “unmonumental, anonymous, pleasant, unpretentious, workable, unhodly”. Just as Charles and Ray Eames “saw” them and wrote it down in their report of April 1958.

The Eames’ had been asked by the central government of India for “recommendations on a programme of training in design that would serve as an aid to the small industries, and that would resist the present rapid deterioration in design and quality of consumer goods”. They toured through India for three months.

As a result of their study they submitted a report - a mixture of a declaration of love for India, a vision of, and a plan for a national school of design. Three years later in 1961 NID was established by the central government as an autonomous national institution for advanced training, research and service, mainly in product and visual communication design.

The bricks, glass, wood, concrete, grass, steel, water, trees, cast-iron, make up an environment of deja vu, of buildings or parts of buildings seen in Kyoto, Ulm, Kassel, London, Aspen, Stockholm, Eindhoven: you feel at home at once.

It is less warm than out in the town in the brawling streets - almost cool, and quiet.

The main complex comprises studios, laboratories, seminar rooms, lecture theatre, library, offices - you can breathe, stretch out in them - and workshops, Workshops! Like factories. All with their main floor 3.24 metres above ground level.

The entire building is on stilts.

The site, 20 acres of land, is on the west bank of the Sabarmati river.

NI D's first phase is now complete:

During this first phase, students were recruited who had already studied for four or more years at schools of architecture, fine and commercial arts. They were educated and trained, mostly by visiting lecturers, mainly from Germany, Switzerland and the United States, all experienced designers.

This kind of post-graduate programme gave the NID its Indian staff.

Kumar Vyas, product designer, is the Chairman of the Faculty Board.

In the Department of Visual Communication, the responsible teacher-designers are Dashrath Patel (exhibition, photography), Ishu Patel (film), Mahendra Patel (typography). Subjects relevant to design, like sociology, psychology, history of art, economics, communication theory, were from the beginning taught by Indian staff. The Indian designers now teaching have all studied and worked as designers abroad.

NID, now in its second phase, offers post-graduate studies.

But the emphasis is on the undergraduate programme. Courses are offered in the design of consumable products, furniture, textiles, ceramics, exhibitions, photography, films, and printed media.

In all, 70 students are enrolled.

Student-teacher ratio is excellent: 1:2, 1:3, 1:4.

Teaching and training of undergraduates is programmed at 5 years.

For the coming academic year beginning in July, the NID for the first time advertised its courses nationally, inviting applications from suitable candidates. It received 800 applications. Kumar Vyas estimates that perhaps 400 will take entry tests, of whom about 30 will secure places.

Full student capacity will be reached with 150 students.

Tuition fees are 100 rupees per term.

The student has also to pay for his board.

Public support, just by their earnings through designing.

Their attitude is courageous and admirable.

NID is determined to do what Ulm failed to do: to integrate professional practice and design training, not only survive, but thrive on it.

In a school of design in another developing country, Kenya, some years after its founding, students of visual communication also learn and train mainly by working for selected East African clients. But their present programmes could not be financed solely on the fees earned. The experiment at NID is a unique one.

Some of the results, the output of its students and their designer-teachers, were on display on 18-3-72 NID, at the end of its academic year, opened its doors to the public. This writer feels qualified to comment only upon the work exhibited in the field of visual communication.

It was as good as any good work done in any design school.

It also showed the same weaknesses of such work elsewhere. Design is still thought of as art.

Decisions taken are still too often based on opinions, where they might be based on available data.

What NID needs, as do other schools of design, is more data upon which to base decisions and to collect data which is already available.
Several years ago I saw a documentary made by the BBC about a small town in Kent. Because they were foreigners, they saw their subject with fresh perception, and produced an informative, compassionate film. An American would have been too biased to see Kentucky anew.

With that example in mind I have had the adventurous bit of a student in Ireland and snooped around many design schools as possible within a three months period. Although my work is not yet completed, to date I have visited some fifteen design schools in Britain and Ireland. I have seen a number of Diploma exhibitions, have spoken with faculty, and have had long conversations with students.

I chose Britain because I had been impressed with the quality of design education in Canada during a recent lecture tour there. I found that many Canadian schools have British faculty, and frequently Canada has patterned design education after Britain rather than America.

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In Scotland it is accepted that design education is a matter of national concern and not only of interest to designers and their clients. The Scots feel that it is a matter of regret that outside Ireland and snoop around as many design schools as possible within a three months period. Although my work is not yet completed, to date I have visited some fifteen design schools in Britain and Ireland. I have seen a number of Diploma exhibitions, have spoken with faculty, and have had long conversations with students.

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Relating teaching to what is known about learning

David Warren Piper is an educational psychologist with considerable experience of teaching in design and architectural schools. He is currently working at the University Teaching Methods Unit of the University of London Institute of Education.

Teaching is creating conditions in which learning takes place. It is not something one person does to another, although very often what is to be taught is presented by the teacher to the student. The teacher is usually concerned with what is learned, a...
artificial rewards which have no existence outside teaching institutions. They can be used successfully to cajole and lure a student through his course work, but may result in the student carrying few of his good work habits over into employment, as the reason for their adoption has ceased to exist. Indeed, any set of rewards and punishments which are extrinsic to the task to be learned is likely to require a contrived situation to sustain them, which can only mean that the student fails to become self-sufficient. Remove the student from the system and the standard of his work will fall. Rewards which are intrinsic to the work are more long-lasting. This seems to be one of the advantages of project-based work which many students enjoy doing. Often a student’s motives conflict with each other and this can result in anxiety and other emotional difficulties. One constant conflict arises from a student’s dependence on his teacher for learning. Yet one of the things he has to learn is independence. It is unfortunately, too easy for us teachers to pose as authorities. Yet, the purpose of education, many of us would argue, is to free people from reliance on authority. If the student’s course succeeds in this purpose the authoritarian teacher is likely to find his prestige among his students dwindling, but not the least Socratic teacher may find himself sorely tried by the perverse contrarieties of a student struggling to establish the independence of thought that he knows is expected of him.

People, of course, can only work in response to rewards and punishments which can explain the expectations remain unfulfilled the resulting disorientation can lead to anxiety, loss of morale, withdrawal and apathy. (Brainwashing) employs the systematic disruption of such expectations). The initial burst of enthusiasm of a student joining a new course may give way quite suddenly to depression as he discovers that the work he has to perform is life or even his job doing. Rather he will be engaged in activities which, it is judged, will enable him to do much more besides. Education is based on the expectation that a student will be able to generalise from the specific difficulties he experiences, so that later he may cope with new, even unforeseen situations. It is taken for granted that he is able to transfer what is learned in one situation and apply it to another. Evidently, one of the aims of education is the feature of human behaviour, it is fundamental to man’s adaptability. However, it cannot be assumed that transfer is automatic; for it to occur at all the student must perceive the connection between the situation in which he learned and that in which he is required to perform. It is because of this that learning to analyse situations to their fundamentals is at the very centre of education. It seems that the ability to transfer information is a skill which may be improved by practice, and courses can be strengthened by including such practice. Indeed, a good deal of ‘creativity training’ consists of just such practices.

One cause of poor transfer then, is lack of practice, another, mentioned earlier, is that the motives which drive a person to learn are not the same as those which cause him to work the way that he does, (a reason, for instance, why corners are cut with safety measures once a person leaves the training laboratory and gets into practice). Another cause is that it is sometimes difficult to impossible, to create ‘the real thing’ on a college course: (a language laboratory does not rebuild a foreign country, management games do not recreate a business organisation, a laboratory experiment does not often fully recreate naturally occurring conditions).

The obvious way round this last difficulty is to include the equivalent of ‘on-the-job training’ as part of a course. Thus, language students spend some time abroad, architectural students have a year in practice before qualifying, geology students go on field trips. A balance needs to be struck between practical experience of this nature and more artificial teaching situations. On the job training, for all its strengths, has six major disadvantages: the practitioner responsible for doing a job cannot give his student undivided attention; a balanced programme of practical work cannot always be offered, and tasks may not come in the best order for learning; critical aspects of the work cannot always be selected for extra practice; coping with students may interfere with the main work programme; there may be little or no opportunity for teaching background material; because of the foregoing difficulties a course consisting entirely of on-the-job training would have to last a long time, and that could be expensive.

The importance of fostering easy transfer is obvious with courses directly preparing students to enter one of the professions, although general education which takes as its objective that students shall ‘learn how to learn’ must be depending heavily on the same phenomenon.

There are a number of ways of seeking to lessen the gap between ‘training’ and ‘practice’. One is to assess the student’s progress in terms of what they can do, in terms of what they are able to recognise and recall; this relates to the desirability of writing educational objectives in operational terms. A second way is to prepare students to be adaptable, rather than having them well rehearsed in a limited number of set procedures. The difficulty with that strategy is that success in the junior professional positions which a student may enter on completion of his course often relies on facility with a just a design of a draftsmen or detailer. There is experimental evidence to suggest that even in work that makes only limited demands on a student, those with some experience of a wide variety of situations tend towards greater competence than those who have seen a lot of the same situations. It may be better for a teacher to try to give his students experiences in fields outside his own immediate environment, rather than sticking to those on which he feels he is able to provide the best instruction.

Practising errors

Learning by doing supposes that a student learns from his mistakes, (as and earlier suggested it is important for students to know whether or not they have made a mistake, as soon after the event as possible). An opposing theory is that every time a student makes a mistake he is practicing his error, and is therefore more likely to repeat it. From this it is argued that student work should be arranged so as to keep the possibility of error to a minimum and that teachers should avoid mentioning misconceptions, or incorrect interpretations, or false material. The evidence on this matter is inconclusive and most likely both propositions are correct according to circumstances.

One interesting study demonstrates that the students who ended a particular course with the least number of misconceptions were those who had most misconception at the beginning.

The organisation of material

The more meaningful information that is to say the larger the number of points where information makes connection with already-related information, the quicker it is learn. From this follow the commonly accepted propositions that maps and charts, move from the familiar to the unfamiliar, from the simple to the complex, that the structure should seem to be occasions when both axioms may be profitably abandoned, although there is insufficient evidence to say when these occasions might be.

The way in which a student ‘structures his knowledge’ is so important to both memory and comprehension; that a teacher’s time is better spent in helping a student to organise his knowledge than in turning himself into a font of information. It has been demonstrated experimentally to be more effective to teach a simple outline, and allow the students to fill in the details themselves, than to teach as much detailed information as possible on the principle that the more they are taught the more will remember. A large amount of related information leads to a condition known as ‘mental dazzle’ in which learning is impaired.

Complex skills can be successfully taught by breaking them down into portions which the student can learn separately, thus ensuring that all the constituent activities are adequately practised; but it is important to do this less frequently to integrate the separate activities and practice the student in the whole operation. It is in the integration of initially separately acquired skills into a single flowing operation, in which
the individual no longer pays conscious attention to all the elements, which differentiates the experienced person from the learner; think of learning to change gear in a car, or to use a typewriter, or to handle paint. The same applies to other complex skills such as interviewing.

Active and passive learning
Teaching procedures which involve the student in a sustained active learning activity are generally more effective than those in which the student remains passive. Even if the student fails to complete the task the student is made aware of his own knowledge and ability, thus giving him immediate feedback, correcting the propensity, which most of us have, to over-estimate both. A number of studies have demonstrated the superiority of guided discussion and the Socratic method of question and answer over the simple imparting of information.

Massed and spaced practice
As a general rule it is often more effective to divide learning time into a series of short, active periods separated by short rest pauses, than to work the same total time in long periods. The optimum length of time depends, among other things, on how much a task can be divided before it fades, rises to a fresh but lower peak. There is therefore, no optimum time which training should be continued varies from task to task. The teacher can play safe by separating similar material when there is no obvious virtue in holding them concurrently.

Retroactive inhibition
It has been discovered that the retention of what has been learned during one period can be impaired if the activity which follows it is concerned with similar material. This is known as retroactive inhibition. As the time involved in the previous occasion does not suggest an obvious course of action for the teacher, since the phenomenon has been described in laboratory studies. Its importance in the classroom is not easily demonstrated. The teacher can play safe by separating similar material when there is no obvious virtue in holding them concurrently.

Over-learning
The maximum retention of information or a skill is obtained when practice is continued beyond the time when the student is first able to accomplish what is required. The length of time which training should be continued varies from task to task and can only be determined by experience. Adding one third of the learning time is offered as a very rough rule of thumb.

Rebuscence
The ability to remember what has been learned, or to perform a task is not often at its peak immediately after the end of a learning period. The amount recorded increases for a little while before a person begins to forget. This kind of recall is quite passive and requires no effort. As the time involved in reaching the peak is more likely to be measurable in minutes, than in hours, information about rebuscence is more relevant to the organisation of activities during teaching periods than to the time-Tabing of examinations.

Position of information in the learning period
People required to learn things by heart tend to remember things from the beginning and end of a learning period better than things from the middle. This is irrespective of the length of the learning period, so advantages may be gained by students working in relatively short bursts. When people are required to pay attention, as in lectures, the attention levels rise to a peak shortly after the start, once as it were, have people settled down. Thereafter attention fades, rises to a fresh but lower peak shortly before the time when the period is expected to end. One study noted that students were able to recall 70% of what was said in the first ten minutes of a lecture but only 20% of what was said in the last ten minutes. There is no constant optimum length over which people can pay attention but by and large one hour seems too long, the optimum seeming to vary between twenty and forty minutes. This seems a good argument for breaking up a lecture period into a number of sections in which different material are used, or in which students are required to do something other than listen or watch.

Speed of learning
The quality of a person's performance does not increase steadily with the amount of practice which he has. If the whole of the learning process is observed, progress is usually found to be slow at the beginning, quick in the middle, and slow at the end. A student learning a completely new skill may show little progress to begin with; this does not necessarily adumbrate a poor performance later. Usually students start a course with many skills at least partially developed: rapid gains at the beginning can create a false expectancy so that disappointment ensues later as progress drops off.

When learning complex operations, a whole series of skills may have to be mastered. Learning to type, for instance, involves learning to locate the keys, to control new finger movements and the development of a smooth set of actions for typing common words as units rather than a letter at a time. In such circumstances the student's progress is typified by a series of bursts interspersed with plateaux where no visible progress is made. The plateaux occur as a student embarks on the acquisition of a new skill, and so an apparent dropping behind of a student may indicate that in terms of development he is ahead of his classmates. There is a story told of a typing school run by one of the armed services which systematically failed its best students for dropping too far behind a target rate of progress which was a straight line drawn on a graph.

Conflict between these principles
It will be seen that some of the principles above run contrary to one another: for instance, the need to organise work into meaningful sequences and the desirability of short work periods. In these cases a balance has to be struck and therein lies one of the skills of a good teacher. It seems impossible always to predict which principle will be overriding in a given circumstance and so the need for adaptability and an opportunity for a teacher to try again if the first attempt fails, are fundamental requirements.

Learning at home for pre-school children

345 Limited is a company specialising in the production and marketing of aids to pre-school education. The products are aimed at helping parents to guide their children's development, through play at home. They have developed materials for three main areas, pre-reading activities, number sense and speech development. A series of books includes picture stories, rhymes, puzzles, tear-out games and gramophone records.

The company has two main product groups: a 12 month 'Nursery Course' through the mail, and a range of books which are distributed through retail outlets.

The 'Nursery Course' is bound into twelve separate parts, which are mailed monthly to subscribers. Each month comprises 10 graded activity cards, an 8 page explanatory booklet containing further ideas, suggestions and items of information, and a 7 inch 45rpm gramophone record of rhymes, songs and stories. The present retail range of 9 books and 3 gramophone records are each designed to concentrate on one aspect of a young child's pre-school educational needs.

Right, pages from Shape Reading, a book which aims to encourage a child's power of observation and awareness of words. In an introductory guide the designer explains how each page in the book can be used. Their notes are given under each of the pictures.

Iris Grender, Editorial Director, and Geoffrey A J Butcher, Art Director, collaborated for a number of years on the Monthly Nursery Course before developing their ideas into this series of books. Iris Grender taught in Infant and Primary schools before starting her own Nursery School in Kent. She has three children of her own and this width of experience has helped her to shape the techniques employed in the books. Geoffrey A J Butcher has two children and has co-ordinated the design and illustration of all the products since the company was formed.

345 Limited runs a nursery school for children of widely differing backgrounds and this has been useful as a design laboratory for testing visual ideas and drawing styles.
Two spreads from Alphabet Sounds, a book which aims at helping a child build up associations in his mind between the look and shape of each letter of the alphabet and its special "phonic" sound.

In an introduction to the book, the designer's explain to parents the aims and attempts to meet. "As adults accustomed to reading, if we think about the alphabet at all we think of it as A, B, C and so on; and if we speak that aloud the sounds we make are Ay, Bee, See. But we are in fact assuming a knowledge of "phonic" sounds that young children have yet to learn. Ignoring this, and teaching them the formal adult alphabet can cause them great confusion. For example, using our adult alphabet, a child faced with the word 'cat' would sound it 'see-ay-tee' and that will not help much for the child must wonder "Who or where or why or what is a seeaytee?" Who can blame children thus confused for giving up the attempt to read?"

They go on to explain further that "Conrad and Oswald are the key to the kind of game we play in this alphabet, for we have introduced each letter by means of a character and his or her occupation. A lot of these people's names and the things they do will be familiar already to many children, but some of them won't. The "phonic" sound for Y, for example, is as in 'youth'; and there simply isn't a common name beginning with Y that has that sound. Throughout the book an attempt has been made to secure consistent use of "phonic" sounds such that when the letters C and O occur elsewhere, they are given the same sound value as in Conrad and Oswald. The illustrations for Alphabet Sounds are by Ed Lister.

Page 1

Tear out the ladders to make four of different lengths. By playing with them a child will discover that all four apples on the tree can be picked simultaneously, or that the boy on the tallest ladder can pick all four apples. Size grading is one of the skills involved in reading. It helps a child to recognise the difference between large and small words and letters.

Page 2

In each of these lines of animals is an odd one out. Search along each line and help your child to find the oddity. Scanning from left to right is a basic aspect of reading most Western languages, and this skill can be practised with pictures. For example, point along the row of rabbits and ask "Has every rabbit got a tail?" Young children love repetition, so the more you repeat such questions, the more of a ritual you make the game, the better.

Page 5

Simply tear out the elephants and play a game putting them into a line in order of size. It is easier to start with the biggest. All shapes, words and letters are partly patterns, but since these elephants are all exactly the same shape they are harder to sort than different patterns of the same size. Sympathetic help never harmed anyone. If you are asked for it, give it. You are playing this game together, after all.

Page 7

In any form of jigsaw puzzle a child is sorting out shapes. It needs great skill to see the difference between U and V, for instance. In solving this teddy bear puzzle your child will be sorting shapes very similar to those in printed words. Don't give the game away and say what the picture is. There are ways not to help as well as ways to help. Children derive enormous, joyous wonder and sense of achievement in making their own discoveries.
An approximate English translation is 'To want to know is to reach towards the future.'

Sketch designs for a series of book jackets, 1970

Calendar, for Cloeck and Moedigh, 1967


Top, book jacket for a series, 1970
Below, a detail from a cover design for the yearly report of the Amsterdam Council, 1967
We show a small selection of works by the Dutch graphic designer Jurriaan Schrofer. They find a place, not just because they are pleasant to look at, but because they characterize an important aspect of visual communication. All forms of visual communication demand skills of mind, hand and eye. Schrofer shows us what he calls his ‘finger exercises’ that lead, hopefully, to better future performance. It is a good description.

Most of these works grew from the starting point of an actual commission. They represent attempts to extend the brief, to test out different possibilities. Most graphic designers will find them easy to recognize. They are the explorations that the client will seldom see unless, by some chance, his needs and our discoveries coincide. More often they are records of the cul-de-sacs, the blind alleys that we encounter on the way to a solution. These works seem to demonstrate many of the characteristics that we urge our students to display. The ability to pursue an idea to the bitter end; to squeeze it dry and, more importantly perhaps, to discard it when it no longer seems appropriate for the job in hand.

Schrofer’s preoccupations in this set of drawings are part of an ancient tradition. Visual writing has a very long history. What is presently called literature is material that was transmitted and preserved only by word of mouth until the invention of writing. For many centuries written literature was no more than a record of spoken language. The invention of printing silenced literature. Printing turned literature into a visual medium; meaning was given form.

In earlier societies, with a greater sense of awe than our own, it was a matter of course that important utterances deserved worthy presentation. Even our more utilitarian society often pays considerable attention to choice of form when the occasion demands it. We hand our university students diplomas, sometimes printed on imitation parchment. We pay attention to the forms of lettering when the meaning of the text seems to rule out a casual scribble.

Schrofer’s offerings are not high art but they seem to share some of the traditions of our mediaeval predecessors. For a monastic scribe, the setting down of the holy word was an act of devotion. And, no doubt, they too gave time and love to the development of their illuminated initials, textual patterns, ornaments, which could then serve as a vocabulary for future compositions.
Below, two of the cover designs for the Looking and Seeing series

Designing books that present a visual argument

Kurt Rowland

Kurt Rowland was born in Vienna. His freelance career began in 1951, and his association with a London educational publishing firm provided the impetus for him to write and design his remarkable Looking and Seeing and Learning to See, a series of books for schools designed to act as courses in visual education.
position of being able to mould my subject matter according to the exigencies of the printed book. The content of each book was not, as it usually is, conceived in the abstract and then translated into so many pages. I saw the books from the outset in a form which did not vary substantially from their eventual appearance.

Each book presents a number of ideas, develops them and relates them to each other. This process halts occasionally to clarify, to compare, to consider. The basic pattern is, therefore, an alternation of dynamic evolutions and movements - and comparative groups - those which describe similarities and relationships. The successive spreads of each book are, therefore, also natural units of the argument. Only when I was satisfied that a sequence worked within itself and that it linked up with the next in a logical fashion, and when many of the pictures had been produced, did I begin work on the copy. Changes which became necessary as the work proceeded were mostly caused by pictorial failure. Those ideas which resisted visual clarity were as a rule discarded no matter how 'true' they might have been in the abstract. New ideas with greater visual potential took their place.

By most standards this would seem a dishonest method of compiling a book. In actual practice, however, I found that the gaps were easily closed and that the discarded ideas attached themselves to other passages in the book in a more viable form. The possibilities of the medium constantly gave rise to new possibilities of subject matter. I cannot see how else it would have been possible to produce books with a largely visual subject matter and, in the case of Learning to See, of an eminently perceptual nature.

In this way the books 'just grewed' and they were allowed to assume what appeared to be their most natural form. Since it is the purpose of these books to stimulate informed and critical attitudes to the environment which spring from non-conceptual vision, an orderly, clinical layout might have acted against the true educational aims. It is not enough to present subject matter clearly, for without stimulation communication will be reduced. This applies to all educational books up to a point, but in a book whose purpose is to stimulate the sense of sight, perception and visual imagination, this principle becomes paramount. At all stages balance between visual communication and visual stimulation must be struck. I would like to think that this balance is, in this case at least, an expression of the subject matter.

But there must be modifications. For instance, Book 4 of Looking and Seeing is, in effect, a history of town design. Almost every page introduces ideas which keep the reader's mind fully stretched. Here the layout had to become more reticent.

It would be idle to pretend that all my aims have been achieved. Economics once again made a difficult task more difficult. All pictures had to be produced in s/s and this meant that loaned photographs had to be re-photographed with the resultant loss of quality.

The need for maximum clarity of all visual matter in the face of these difficulties necessitated a reduction of margins to an absolute minimum. The Looking and Seeing books, therefore, have a rather crowded look which would almost certainly not have been acceptable in a trade book.

In spite of these drawbacks, the books seem to work well as tools of education in the situations for which they were intended. The fact that both the series have been welcomed by teachers and are now in use in many countries is, I feel, a justification not only of the educational ideas behind them but also of the manner in which the visual material was presented.

- Learning to See, icographic, 4, 1972
  Author's address: 81 Southway, Totteridge, London N20 8DE, England
I have been trying to teach design students for a number of years. More than long enough to know that there are no easy answers to the problems of an educational programme.

I got into teaching because I was a designer, not because I was a teacher. In universities and colleges of Art and Design in Britain it is tacitly assumed that if you are a skilled practitioner, then you will find ways of teaching your particular specialization.

Over the years I have come to regard this as a very questionable assumption. Training people is a highly skilled task in its own right. It demands certain attitudes, knowledge and skills that cannot be taken for granted in the practising designer, or artist, no matter how skilled he may be in his own field.

Like many of my colleagues, I have subsequently spent a lot of time and thought on trying to make good earlier deficiencies; trying to improve performance in my teaching. In this continuing apprenticeship I have been helped by the fact that I was, and am still, primarily a designer, not a teacher. I have also been able to ask myself, ‘What have I discovered, is this a design problem?’ To be effective it has to be based upon a rational analysis of the job to be done. From this must grow a teaching programme designed to achieve defined results, and based upon a sound knowledge of all the available materials, processes and resources.

Since coming to Ravensbourne I have been concerned with helping the School of Graphic Design to re-examine its aims and methods of teaching. As a result of these studies a new course was planned and is now beginning its third year of operation.

One of the features of the new course was an introductory teaching programme devoted to what was described as ‘design thinking’. The students spent the first two weeks of their course in giving some formal consideration to their own thinking and that of their fellow students. In designing this short course I hoped that it might meet the following basic objectives:

1. It would allow the student to demonstrate to himself some of the difficulties that are commonly encountered by all human beings in a problem-solving situation.
2. It would allow the student to use these experiences to derive some useful observations about his own performance as a problem-solver.
3. It would allow the student to demonstrate to himself that some of his difficulties in thinking might be due to the use of ineffective strategies, rather than to any lack of mental ability.
4. It would allow the student to consider, and begin to devise various formal and practical approaches to the identification and solution of design problems.

The programme would stress the fact that it was in no way intended as a means of stifling a student’s bright ideas. Its aim would be to make them better at evaluating the consequences of their bright ideas when they have them.

The students selected for the graphic design course at Ravensbourne come from a variety of Foundation Courses. Foundation Courses are thought of as being, broad, general introductions to the many kinds of work that go on in a college of Art and Design.

Obviously they vary a good deal in their character and effectiveness. They also have to select their entrants from among those secondary school students whose educational achievement and ability might be considered to be below the standard which would secure them a place at a university.

At present, the secondary schools in Britain seem unable to offer students the means of seeing the connections between a wide variety of apparently unrelated subjects. Nor do they seem willing to include much in the way of creative problem-solving in their study programmes. Consequently, the Foundation courses could offer the student an opportunity to re-define his picture of the outside world. Our experience is that few Foundation courses are providing such opportunities. It is unfortunate, and it gives the Diploma Colleges additional jobs that can only be described as ‘remedial’.

The first of these jobs is to allow the student to consider their so-called creative thinking skills. For the most part, they have been allowed to take their thinking for granted. Solving a design problem, or even any kind of problem, involves intelligent behaviour. The hallmark of intelligent behaviour is being able to adapt to the environment in a creative way. But this is more difficult than it appears. Many people, including students, tend to think of intelligence as a fixed entity; believing that some people are born bright and some dim. They appear to visualize intelligence as a commodity of which everyone gets a certain amount at birth, and that this initial legacy will largely predetermine the extent of an individual’s future achievements. Presumably, this kind of thinking is self-fulfilling and the student who thinks is determined by the way in which he perceives himself and the world about him. The attitudes that a student brings to the study of his chosen area will largely determine his chances of success, since problem-solving is influenced by personality and motivation.

Each student joins his Diploma course with definite motives and a well-established personality structure. So that, in planning any kind of introductory programme it is useful for the teacher to know something of the ways in which the students perceive their selected option. Misconceptions, or unhelpful attitudes of mind have to be located early, so as to give the student an opportunity to dispel, modify them, or even to choose another area of study.

It was to make a small beginning in this direction that I introduced a small group of questionnaires. These were to be filled in by each student before they began any formal studies. The results from one of these were striking (to me, at least), to prompt me to record them in some detail.

Kant pointed out, as have others, that we do not just perceive the world, we give it order. Everything that impinges upon our conscious-ness is subjected to some kind of filtering process. From an almost limitless amount of sensory data we select, reject, or discriminate in some way. Sometimes we undertake this filtering in a consciously deliberate way; we weigh up alternatives, carefully examine evidence and form judgements. At other times our filtering process is less rational. We accept or reject things intuitively, allowing our prejudices to influence the judgement we make.

For those of us who are less than saintly it is this less-rational filtering process which most often influences our everyday behaviour. In many cases this is allowed to influence our choice of relatively unimportant things such as our clothes, our motor cars, or our amusements.

Unfortunately, it can sometimes be used to determine our choice of the kind of education we want, or the kind of profession we would like to have.

This particular questionnaire owes its existence to the work of Dr Liam Hudson whose two books Contrary Imaginations [1] and Frames of Mind [2] helped me to see more clearly that the way in which a student perceives himself and the world about him, may determine which of his mental gifts he feels free to display.

In Contrary Imaginations, Liam Hudson looked at two kinds of clever schoolboy and thought he could distinguish two characteristic forms of ability. These he termed the ‘converger’ and the ‘divergent’. To quote Dr Hudson:

‘These schoolboys differed not only in the bias of their mental abilities, but also in their choice between the arts and sciences, in their interests and attitudes, and in the expression of emotion.

The converger excelled in the conventional intelligence test, specialized in physical science or classics; held conventional attitudes; pursued technical, mechanical interests in his spare time; and was emotionally inhibited.

The diverger, by contrast, excelled at open-ended tests (tests, that is, which do not have a single, right answer); specialized in the arts or biology; held unconventional
This questionnaire has been given to 54 new students who have joined the Diploma course in graphic design since September 1970. It is an adaptation of one devised by Liam Hudson as part of his researches. In essence, it asks the student to...
a new theory involving figures; tends to reflect on very boring life.

They require a fair amount of intelligence, very little imagination; but are hard workers”. 3

Someone who thinks logically and everything’s clear cut - black and white. The job does not involve the emotions, they are usually dull people personally. It takes a queer kind of logical intelligence to make a mathematician, but work does not involve other people - just numbers and formulae.

One would expect a mathematician to be ultra-intelligent with a brain too small for him almost. The type of person who, when talking about his own subject would stutter because the words were coming too quickly, but with not enough imagination to understand anything but maths he probably would not consider himself a hard worker.

I cannot imagine that he would feel excitement at his work, but certainly exhilaration and intellectual stimulation as he goes from stage to stage”. 2

A successful mathematician is someone who can understand his 7 times table.

A mathematical personality is hard edged and therefore this characterlessness makes him suitable. He needs to be extremely intelligent and completely unimaginative.”

The mathematician tends to be a rather highly intelligent, hardworking but introverted person. He is normally dedicated to his work to the extent of following a problem to its conclusion, no matter how long it takes. His work has quite an important part to play in society, although it is rather repetitive and unexciting (although he probably would not look on it as such).

The work he does is not particularly exciting or imaginative, but at least there is the satisfaction of weighing up problems and solving it with numbers and formulae, which are the sole tools of his trade.”

The mathematician is simply the extension of the bright whizz-kid in the maths class you hated. He is smart, interested in logic, and can cope with the organization of things which simply exist on paper. He is secure in his subject and ready to discuss of these stereotypes. One of the happier aspects of this work is when I am told by students after completing the programme that they now feel able to reveal that they enjoyed mathematics, or perhaps one of the physical sciences. They had not dared to admit this before, since it did not fit the picture they wanted to create of themselves as artists!

Selected references

1 Hudson, Liam, Contrary Imagination A Psychological Study of the English Schoolboy, First published Methuen 1966 Published in Pelican Books 1967

2 Hudson, Liam, Frames of Mind, Ability, Perception and Self-Perception in the Arts and Sciences, First published Methuen 1968 Published in Pelican Books 1970

Burke: The myths of art and science

20 icographic 4, 1972

imaginative, warm, sensitive, perceptive, not too hardworking. Here are a few samples:

The psychologist

A psychologist has to be particularly sensitive and perceptive to each individual type of character, although each one of them is then put into some category. He needs a basic human intelligence, a fantastic imagination and an ability to work hard at understanding things ...

Work likely to be constantly stimulating and demanding.”

Like many others, I find it sad to see that so many students have been helped to acquire a picture of our society absurdly divided into ‘two cultures’. They have been led to believe that science makes no appeal to the emotions, and that scientists are never guided by them. By contrast, they also believe that art is governed only by intuition and the emotions. They can hardly be blamed since this popular fallacy seems often to be shared by art teachers and science teachers alike. Few scientific discoveries are made solely by logical deduction, whilst few works of art are made without considerable calculated skill.

And intuition plays a major part in both. To the common mind the creative achievements of the sciences may lack the popular appeal of the arts, for various reasons. I am not qualified to say whether this kind of cultural prejudice is the same in countries other than Britain. I only know that its existence here has created artificial frontiers between areas of creativity that are, in essence, parts of one continuous process.

The responses to the questionnaire tended to confirm my own feelings as to what students believed when they arrived. As a result, some of the initial teaching programme is devoted to discussion of these stereotypes. One of the happier aspects of this work is when I am told by students after completing the programme that they now feel able to reveal that they enjoyed mathematics, or perhaps one of the physical sciences. They had not dared to admit this before, since it did not fit the picture they wanted to create of themselves as artists!
Problems of adult education

Ake Edfeldt

Ake Edfeldt is Professor in Education in the University of Stockholm. He has published a number of books and articles on reading, communication effects, and behaviour modification. He has also produced various television series on general adult education and emotional training at work and in home life.

Adult education poses a number of problems when you begin to talk about it. Is it education, certainly, but what kind of education? It does not seem to be a methodological entity, nor does it appear to have a specific content or structure. Adult education might be what happens to a university student, or an industry trainee, to a trade union member going to study classes, or to someone watching a television program. It might equally apply to someone reading the Highway Code or to the 'rabbit' golfer eagerly seeking help from the club professional.

You just cannot cram all of these activities into a finite set of rules, nevertheless, an obvious and reasonable starting point in designing adult programmes is to analyse the particular educational goals and problems before making a choice of teaching devices, course content and methods of instruction.

This ought to be self-evident, but in practice adult education is often treated as though it were just like ordinary school education, only more so. It is assumed that adults differ from children only in their capacity to accept a greater load. After the last war the various re-training programmes for demobilised servicemen were an example of this assumption. As a result, the idea died amid a shuffling of restless feet in the classrooms - phenomenon known to every teacher, and meaning that our adults, like our children, had reached maximal load. The adult, with his or her greater capacity, is already burdened with cares.

But there are some more important distinctions:

The adult learns in a different way. The learning process changes with age. For the adult, the ability to learn more or less meaningless material decreases from about the ages of 12 to 15. In exchange, however, comes an increased possibility to learn meaningful material.

The adult is intrinsically an action-oriented learner. He knows why he is learning and works towards definite goals. He will read a list of educational objectives to see whether the course covers his personal needs. And while studying he will want to know how he is progressing.

The adult has to be encouraged to join a programme and to remain on it. Adult education is usually voluntary, so that particular motivation is necessary for the student to enrol and, thereafter, to keep him from dropping out.

The adult comes to a particular educational programme with a lot of previous experience and knowledge. This has certain obvious advantages, but equally it can pose a number of special problems, such as sensorial conflicts (see the closing section of this article).

Above all, the much wider frames of reference of the adult demand that he is given a much more flexible programme. Adults work best at their own pace towards their own individually chosen goals. Individualized study materials, such as those already being widely used in children's schools, are essential for adults.

The adult education operates by means of discussion and workshop activities. This being an inversion of the traditional school approach in which information gathering is done collectively or given, by means of lectures, with its actual application given over to silent, individual work.

Given the special difficulties that are associated with adult education, it has to be remembered that the observations which follow will be of value to anyone engaged in the planning and development of adult teaching programmes. Furthermore, in the light of the growing conviction that all forms of education might profitably exploit some of the newer media, I have some words of caution to offer.

The various items of hardware and educational substances to which they have a major contribution to make to the educational process, but they offer only the means to certain identifiable ends. Unless these ends are clearly specified there can be no guarantee that multi-media presentation will be any more effective than more traditional approaches. I say this as a result of my work in Sweden and elsewhere.

The adult education programme: planning, preparing and making it work

Some time ago, a project group was given responsibility for the planning, construction and supervision of a new technological school in a Swedish university. They decided that all theoretical teaching would be done by means of a closed-circuit television system. Laboratory work, supervised by assistants, would provide the only personal contact.

As a result, small lecture rooms were constructed, intended for about six to eight students, who could each watch a single television set. Construction of the buildings went ahead according to this basic concept.

When the different teaching faculties presented their curricula, no amount of individualistic curricula and the functions together. In some subjects, such as Statistics and Applied Electronics, there was a general need for both simultaneous and successive presentation of visual material. An Eidoscope might have provided a solution to the difficulty, but they are an expensive item, and to provide each lecture room with one of these large screens would be far too costly. The only way to handle this educational problem was thus to equip some large lecture rooms, either with Eidoscopes, or with a series of programmed slide projectors. Preparatory work had shown that a series of four slide projectors satisfied the needs of all the subjects requiring a more diversified audio-visual approach. The construction plans of the university were revised accordingly.

Meanwhile, the State Committee for Adult Educational TV Programme Production had received the university's order for 752 half-hour programmes. They returned it, after careful scrutiny, with the recommendation that much of the material would benefit from presentation in a more suitable medium!

Unfortunately, there is no perfect combination for a multi-media teaching system. There are always numerous possible combinations, and the problem is to choose the most effective one for a given situation. Hard thinking and somewhat harder experience have produced the following guide to the planning, preparation and working of an educational programme:

1 General goal definition

which means that you first state your general idea of the intended educational process, within the limits set by your resources and the political situation within which you work.

2 Listing of educational objectives in such a way that there will be one cluster of educational objectives matching every general idea of a goal listed above.

This part of the goal analysing process has caused some confusion among educational psychologists as well as among communication experts. How far is one supposed to go in splitting up one's educational objectives into smaller part-goals? There have been a number of taxonomies published, listing the different types of effects in terms of behaviourally defined objectives.

Some cover cognitive goals as well as emotional ones. In them goals are broken down into the smallest behavioural units that can be defined in terms of measurable behaviour. But this must not be a mechanical separation of the general goals into their constituent elements. Instead, it must be carried out in the light of the educational psychologist's comprehension of every single objective. Otherwise, the possibilities of generalization will be lost in this procedure.

3 Testing the initial level of knowledge

among members of the target group. Preparing the tests will consist of deciding how far the individuals in the potential target group have got along each operationally defined continuum. On each continuum, score tests using simple or data and prediction must be shown. Failures and other specific results from earlier experiments must be included, as this part of goal analysis must provide the educational technologist with a list of all possible outcomes of the educational programme.

4 Stating the task for the educational work now being planned

If the three preceding steps in goal analysis have been fully prepared, this last step is not much more than a mere subtraction: 2 - 3 = our task. We subtract a student's initial level of knowledge from the level defined in the corresponding educational objectives. The remainder is the increase in knowledge or performance that we have to bring about. This is of much greater importance when planning for adults than when the students are school children. The adult student learns better when he or she knows all the final part goals and understands the general reasoning behind them.

5 Gathering of relevant source materials in keeping with the results of 4

This step covers all the leg-work that may be needed to locate specialists in each subject; it also calls for an evaluation of contending schools of thought, and it is up to the educational technologist to assure fair representation. Often, specialists in different subjects are given training as educational technologists, so they are unlikely to neglect opinions in conflict with their own.

6 Final choice of subjects, content matter, acting experts and media

Content, staff and media are here combined to stress the point that they are interdependent. Each effect, to some extent, the degree of freedom that one has for putting together a curriculum. Once one has decided upon the content, all the other headings are subject to limitations, and if only one medium is available, the entire programme is limited.

7 Actual production of educational material

by this is meant the 'software'.
8 Administration
of the intended material to the intended target groups under the intended circumstances.

9 Testing the effects
in the target group, or in a sample, after the programme has been put through. This step is another simple act of subtraction: 2 - 9 = the outcome of the whole educational process.

The subtraction will equal zero if all the given educational objectives have been fully covered. A negative answer to the right will show failure, and a positive figure will show that the programme has been exceeding its goals.

10 Modification
of the total educational plan, or parts of the plan, have to take place if the results found under (9) are good, the results from the previous step can be taken as the starting point for an entirely new programme.

For many design educators it will be step number 6 that is of particular interest, so I will close with some of our experiences and findings in that context.

Problems of the use of media in education

Audio-visual techniques were developed on the assumption that learning is improved by presentation through a number of sensorial inputs. In fact, according to our studies, unless the stimulation is absolutely parallel, the effects can be completely negative.

In a television presentation, for example, where the commentator's voice describes a process step-by-step at the same time as it is shown in terms of moving pictures on the screen, the two versions block each other. The student finds himself watching and not listening or, less likely so far as our tests show, listening and not watching. Even that traditional and much loved device, background music, can interfere with and impair learning effects.

Conversely, visual material used as 'filling' will distract from a spoken message.

This phenomenon is known as sensorial competition, and adults with their broader frames of reference are doubly susceptible to it. This has been demonstrated to some extent by the fact that the average adult gives considerably more answers than a child in Rorschach tests.

If an item in the instructional list calls for a message in sound or image alone, then the creator of audio-visual aids must restrain his creative urges despite his horror of non-sound pictures and non-picture sound.

Where both are required together, care should be taken to avoid competitive divergencies and, more importantly, stimulation for its own sake.

A word now about illustrations. Often there are doubts about which system of illustration is most suitable for a given subject: should drawings or photographs be used? Is there any advantage in using colour? This is a difficult area in which to generalize but our experience suggests the following: Simplified, naturalistic drawings work better than photographs for depicting functions and processes, whereas colour photography works best in the natural sciences such as geography or botany.

In many cases, superfluous photographic details and colours run the risk of creating misunderstandings, either by offering material for convergent ideas, or by producing wrong associations. Children, for example, tend to see nothing they can name in highly detailed colour photographs, whilst adults tend to the opposite extreme, often seeing too many things that are irrelevant to the points at issue.

One further point. At one time we used short television commercials to encourage enrolment for a radio and television series on everyday mathematics. For these we used well-known comedians who appeared in situations where things went wildly wrong because of their ignorance of basic mathematical principles. Subsequent interviews showed us that these very well-known performers drew much more attention to themselves than to the message we were trying to convey.

On the other hand, when we replaced them by comparatively unknown actors, the audience still failed to concentrate upon the message, since they were busy trying to identify who these actors were. Another alternative, the cartoon film, was not included in this particular study of effective communication, but from earlier experiments it would seem likely that cartoons might be more effective in holding the attention of an audience whilst a message was conveyed, assuming that the cartoon idea and production were good.

Many teachers in design and art schools may find the concept of education being concerned with behavioural change somewhat difficult to swallow. Certainly it often proves to be an explosive topic when introduced into discussions with teaching staff unfamiliar with the contribution of modern psychology to the understanding of the teaching and learning process.

A little thought will soon make it clear, however, that teaching is only successful when it makes the student in some way different from the person he was before, even if he merely knows more facts, however futile these facts may be.

But if the aim is to develop the intellect to the fullest extent, then this must bring about considerable changes in the student since, by definition, he will be different from someone who has not had his intellect so developed. This is quite apart from any side-effects such as changes in personality, an increase in confidence, an increase in religious faith, etc, which might have occurred as a result of the basic change.

If this definition can be agreed, then it becomes possible to make considerable progress. For in any kind of teaching clarification of objectives is essential, since it is impossible to determine whether or not teaching and learning are effective if it is not certain what either of them are designed to achieve.

Choosing these objectives is rightly the concern of the art and design teachers. Only they can know what constitutes mastery of their particular field. It is unfortunate, though, that they often lack the skill to be more explicit about their objectives. These are often expressed in vague terms which are capable of a wide variety of interpretations.

Even when the long-term objectives are determined, the intermediate and short-term objectives prove to be difficult. Such things as the maintenance of student interest; the devising of learning programmes; methods of evaluating such programmes to ensure that they are efficient; all demand considerably more skill than is possessed by the average design or art teacher.

The work of many educational research workers has moved some way towards clarifying the obscurities we face. Much more research is needed, but already much is available that is valuable to us.

Neither of these first two books is new (Robert F Mager's Preparing Instructional Objectives was first published in 1962). They are recommended, firstly because they may well be unfamiliar to many teachers working in art and design colleges, and secondly because they will be of value to any teacher who...
has ever asked himself these questions. "What is it that I am supposed to be teaching?", "How will I know when I have succeeded in teaching it?", and "What materials and pr active techniques will work best in helping me to teach what I want to teach?".

Preparing Instructional Objectives

Robert F Mager
Fearon Publishers, USA

If you want to take just one small step towards improving your performance as a teacher then please read this book! It is short (60 pages), it is easy to follow, and it is amusing. The author has written his book as a programmed text. At the outset he specifies what his educational objectives are (what you should be able to do when you have finished his teaching programme), tests your performance, and lets you evaluate it by specifying his criteria for your success.

In his foreword, Mager says this;

"Before you prepare instruction, before you choose material, machine or method, it is important to be able to state clearly what your goals are. This book is about instructional objectives. In it I will try to show how to state objectives that best succeed in communicating your intent to others. The book is not about the philosophy of education, nor is it about who should select the objectives, nor about which objectives should be selected. It is assumed that you are interested in preparing effective instruction, and that you have taught, are teaching, or are learning to teach. It is further assumed that you are interested in communicating certain skills and knowledge to your students, and in communicating them in such a way that your students will be able to demonstrate their achievement of your instructional objectives. (If you are not interested in demonstrating achievement of your objectives, you have just finished this book.)"

It should be possible to add to his remarks, that if you are not interested in demonstrating your achievement of your objectives, then don't let any of your students read this book!

Developing attitudes towards learning

Robert F Mager
Fearon Publishers, USA

If you read the previous book then you will read this one also. It is for teachers who want to be able to demonstrate that their students are likely, as well as able, to use what they have been taught, and are likely to learn more. It shows teachers how to recognize behaviors they can use as evidence of favorable attitude, describes three principalles they can apply to help students to be more (rather than less) favorably disposed towards subjects of study, and offers a way of measuring success and a technique for improving upon it.

The management of learning

Ivor K Davies

Education and training (in Britain certainly, and possibly elsewhere) now represents the largest single national expenditure. As a result, many politicians and economists believe that it is doubtful if society can any longer afford the high costs and low productivity that characterises much of education.

In the past, remarks Ivor Davies, ideas have always lived longer than people, but, today, people live longer than most ideas. ... We are living, in fact, in an age of instability and discontinuity, when skills based on mechanization are gradually being replaced by skills based on information and knowledge technology. In order to prepare themselves for this new role, education and training require a new conceptual framework against which decisions involving change and innovation can be made.

Davies maintains that anyone who sees his function as only that of teaching others, will rapidly become obsolete. He must see himself as being responsible for their learning - which is a totally different concept, as the many failures in traditional teaching methods show. Davies depicts his ideal teacher as a manager, capable of making the basic decisions that will promote learning in others - selection of those things which will inhibit learning; able to operate an intelligent, flexible system based upon his own style; the objectives to be realized; the resources available, and the character of the students involved.

His book goes a long way towards promoting his view of teaching as managing. He writes clearly and organizes his material excellently. As in the previous books, it is designed as a learning programme. Each section is headed by a specific set of objectives, and at the end there is a Posttest which allows one to determine how successful he has been in meeting his objectives. There is an extensive set of references and a reading list is provided at the end of each of the chapters. He covers such aspects of the teacher-manager's job as analysing a learning task and deciding what learning or training are necessary, which audio-visual aids are most appropriate to any given situation; the ideal size of class, seminar, or other form of group; when to communicate in continuous prose, or through heuristics, algorithms, decision tables, etc. He also discusses the measurement of learning and the management of resources.

This one is a must for anyone who is involved in course planning. It should also be required reading for all Heads of Department in colleges of art and design. If they value their peace of mind they will read it before any of their staff get their hands on the book. As with the previous books, this one is one that should not be allowed to fall into the hands of students.

Teaching as a subversive activity

Neil Postman and Charles Weingartner
Delacorte Press USA

An almost impossible book to review. It is polemical, irreverent, and often extremely funny. It is a diatribe against an 'educational establishment' which, in the view of the authors, has 'nothing germane to say about changing our present educational system to fit present realities.'

Postman, who is Associate Professor of English Education at New York University, and Weingartner, who is Associate Professor of Education at Queens College, share an aim which they put as 'to help all students develop built-in, shock-proof crap detectors as basic equipment in their survival kits.' Their thesis is;

"That change - constant, accelerating, ubiquitous - is the most striking characteristic of the world we live in and that our educational system has not yet recognized this fact. We maintain further, that the abilities and attitudes required to deal adequately with change are those of the highest priority and that it is not beyond our ingenuity to design school environments which can help young people to master concepts necessary to survival in a rapidly changing world. The institution we call 'school' is what it is because we made it that way. If it is irrelevant, as Marshall McLuhan says; if it shields children from reality, as Norbert Wiener says; if it educates for obsolescence, as John Gardner says; if it does not develop intelligence, as Jerome Bruner says; if it is based on fear, as John Holt says; if it avoids the promotion of significant learnings, as Carl Rogers says; if it induces alienation, as Paul Goodman says; if it punishes creativity and independence, as Edgar Friedenberg says; if, in short, it is not doing what needs to be done, it must be changed; it must be changed.'

Their formula for bringing about such a change is to subvert the system from within. And the agent of subversion is to be the teacher who is skilled at the art and science of getting children to ask vital questions. Many teachers in art and design schools may fancy that they operate as subversive agents already. But even they might do worse than to adopt one of the suggestions made by the authors. Tape a piece of paper to the mirror in your bathroom, on which you have written these three questions;

What am I going to have my students do today?

What's it good for?

How do I know?

It is, I think, too late to issue any words of warning about this book. This reviewer's copy was given to him by one of his students.
The Culter Guard Bridge Collection

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The Icograda Audio/Visual Archive and Library provides a two-way exchange of graphic communication, a reference centre, a hire service for those concerned with design, and a storehouse for work of historical interest.

The Archive was established in 1966, in order to collect and preserve for future reference important design lectures which might otherwise be lost or destroyed. Initially, it contained only tape recordings of lectures, but in an area of design which is essentially visual, the subsequent addition of films and photographic slides was a logical progression. A library service was initiated, and the Archive and Library now contains a substantial collection of slides, films, tapes and slide/tape lectures concerned with graphic communication, graphic techniques, and educational matters. The Archive provides a service by designers for designers, and for design educationists. Much valuable material which might have been lost has been preserved, and is now available to those concerned with visual communication in all its aspects.

Material at present held in the Archive includes international examples of:

- Poster design
- Illustration
- Book cover design
- Brochure and catalogue design
- Editorial design
- Packaging
- Stationery
- Lettering
- Calendars
- Postcards
- Signing systems
- Symbols and trademarks
- Computer graphics
- Tape recorded lectures on design and related areas

Some of this material is available on loan through our library service to professional designers, associations and colleges, and a catalogue of the work held in the Archive, together with details of the hire service and charges, is available.

But to widen the horizons and extend the facilities of the Archive, we need more work - your work, and any help, financial, material, or in the way of services, which you can give us. Funds are strictly limited, and financial assistance is needed to buy essential equipment and to service and develop the project further. Offers of cash or equipment, particularly audio/visual equipment would be most welcome.

Graphic design publications of historic significance, from all countries are required for safekeeping, and we are anxious to obtain graphic material of both contemporary and historical importance, including traditional graphic forms and the graphic aspects of folk art. Examples of architectural and interior graphic work, including super-graphics, super-mannerism and campo-pop, are also required, together with combined slide and tape lectures, and all kinds of audio/visual material. In order to ensure that the Archive covers as wide a field as possible, work from South America, Cuba, Scandinavia, Italy, France, and Eastern countries is particularly required.

Finally, we need representation in more countries, and we would be most pleased to hear from any designer willing to collect together, on behalf of the Archive, work from his or her own country.

Use the Archive . . . and help us to extend its facilities still further

Anyone who is able to help the Archive in any way is asked to write to any of the following addresses:

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The International Council of Graphic Design Associations was founded in London in April 1963. Its headquarters are in Amsterdam. ICOGRADA is an association of independent Member Associations. Membership is open to societies of professional graphic designers and organisations concerned with the training of designers and/or the raising of graphic design standards. Member associations are elected at the biennial General Assembly, which elects also the Executive Board, determines policy and overall activities and agrees financial arrangements.

The aims of ICOGRADA are:

1. to raise internationally the standards of graphic design and professional practice by all practicable means.
2. to collect and exchange information on professional, educational and technical matters.
3. to improve graphic design training and to assist the interchange between countries of graphic designers, teachers and students.
4. to organise exhibitions, international assemblies, congresses and symposia and publish documentation on graphic design and visual communications technology, including a News Bulletin.
5. to act as an international forum for co-operation and exchange of views between designers, organisations representing professionals from allied and other fields and those of commerce and industry.
6. to encourage the better use of graphic design and visual communication as a means to improve understanding between people everywhere.