

---

## Teaching and Learning with Today's Media

Ng Wai Kong  
Pusat Pengajian Ilmu Pendidikan  
Universiti Sains Malaysia

---

Media dan teori pembelajaran yang berkaitan dengannya mungkin boleh memberi penyelesaian kepada proses pembelajaran di sekolah dewasa ini. Ia memberi peluang kepada guru-guru untuk menumpukan perhatian kepada masalah pembelajaran dengan lebih berkesan. Konsep 'realiti', 'pembelajaran melalui pancaindera', 'ciri-ciri media' dapat memberi beberapa penjelasan mengenai kesan sesuatu media. Masalah penggunaan media adalah masalah yang 'real', wujud bersama-sama percubaan untuk memperbaiki kaedah-kaedah pembelajaran yang dilaksanakan.

Education today is being manoeuvred into a state in which it is expected to solve all ills of society. Lack of good moral guidance, overloaded curricula, and disinterested managers of learning are blamed for the increase in truancy, moral decadence, vandalism and violence. Some of these allegations are not necessarily valid in most instances.

As class size increases and trained teachers are in short supply, effective teaching by traditional means become more and more unmanageable. Teaching-learning resources to cater for forty pupils become less available when there are ten more pupils in the classroom. Attempts to provide the deserving child with reading texts through the Textbook Loan Scheme is highly commendable. Educational Television and Educational Radio are expected to play an important part in the dissemination of knowledge and equalization of educational opportunities primarily in the rural schools. This experiment at equalizing educational opportunities will however yield fruit only after a long time. Then there is the attempt by the Ministry of Education to encourage the writing of programmed instruction texts.

Today's media consists of a paraphernalia of audio visual materials, electronic gadgetry and simple common sense integration of such materials into one's programme! What role does today's media play in educating the child? It would be useful to take a look into learning theories that are directly supportive of role of media in education. Basically there are the Signal Learning of Pavlov and Operant Learning of Skinner. Signal learning or Conditioned Response is the earlier study on the acquisition of knowledge. An electric bell or metronome is triggered at the same time food is presented to the dog. After many trials, the dog will respond to the bell alone by salivating, in anticipation of food. Thus the animal is expecting a reward everytime a response is expected of it. In short, if a child is taught to do work with the knowledge of immediate reward, he is most likely to perform the work.

Skinner developed this concept further. Each time his pigeon did a correct response e.g. turning a full circle, a reward in the form of a grain is given to the bird. However subsequently, rewards are given only intermittently. It is found that the pigeon will perform more objectively when rewards are on an unscheduled basis. The implication here is that if children are always rewarded for the completion of any simple task, they will be less likely to put in more effort. But if effort is expanded for successful completion of a higher level task then rewards are more likely to be offered. Hence one can shape trial-and-error approaches towards more productive activities.

Both these theories explain learning through association or connection between stimulus and response. The correct response to a stimulus is reinforced with rewards. Rewards, however, need not be material. It can be a praise, high marks scored, or *if possible*, satisfaction out of doing a task and a motivation towards further achievement. The conditions necessary for the operationali-

sation of these two theories would be the environment that motivates towards achievement; meeting needs and drives of the child; ability to judge the readiness of a child to learn and identification of follow-up activities to strengthen learned abilities.

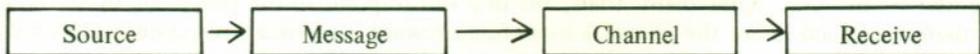
The expanding class-size and expanding syllabi have made the managers of learning more and more distant from the child. How then can media bridge the gap between the child and instructional objectives? How good are we at maintaining a captive audience? Also one must realise that the present generation of children are part of the global "children of the Electronic Era" (McLuhan, 1964). Malaysian children may not be as immersed in the picture tube as Western children, but the seeds of the Electronic Era are here. We have NOISE in the communications system between the Source and the Receiver. This noise could be radio, mass media, western influence etc. All these noises are competing for the attention of the individual child. No wonder the four-walled classroom could be such a sterile place to be studying in.

It would thus be necessary to search out varied stimuli to provide rewarding learning experiences to the child. Media may in fact be the key to this identified need. In addition to captivating and motivating the child, it has the added bonus of providing some form of entertainment and more realistic experience. Also some repetitive procedures could be conducted through media. (If a film on the Life History of a frog is available and can do the job as well as the textbook or the teacher why not let the learner have a choice of media to learn from?).

One practical implication of use of media in classroom is that the potential effectiveness of the teacher is increased. For example, a lighted screen with images on it is bound to attract the attention of pupils. What's more, screen image can be enlarged or decreased and everyone can view it with ease as distinct from the scrawny etchings on the blackboard. Similarly while the majority of the class is immersed in self-instructional programme exercises, the teacher can attend to the weaker pupils. Pupils' projects involving the production of media resources could as well be a learning experience. The ability of media to actively engage the child in learning is an intrinsic advantage that a teacher can successfully employ to enrich and enhance her teaching.

The book, albeit a form of media, is still the major source of information. But inadequacy of the book medium could be supplemented by other media sources. A verbal description of rural poverty could be improved by a real-life field trip into a nearby kampong, or a photo-essay of the same village with tape recordings. The written word, and this includes the blackboard, is too far away from the real thing. Pictures, recorded sounds, videotapes are more real in the "Reality Scale" and hence are more concrete information carriers. Size and shapes are important concepts to a young child. He has difficulty translating two dimensional drawings into three dimensional mental images. Learning at primary level hinge critically on the use of instructional media, be they 3-D objects, picture cards, or even television.

Take a look at the Shannon-Weaver Communication Chain (Shannon & Weaver, 1949).



The "message" box here implies any "idea", "information", "persuasion", the source would like to communicate to the receiver. No one is obliged to put it into written words. After all words are not the only form of communication. Depending on what channel one uses the message can be coded in a variety of ways. Our five senses (Sight, Hearing, Taste, Touch, Smell) in fact allow for various channels to receive the message. They need not necessarily be through books. Why not use photos, tapes, models, charts, or a combination of them?

The concept of "reality scale" can in fact explain for the effectiveness of media in teaching and learning.

Allen (1967) made a study of media stimulus and type of learning. The results are tabulated.

**TABLE I**  
**Relationships Between Instructional Media**  
**and Learning Objectives**

Instructional media type	Learning factual information	Learning visual identifications	Learning principles, concepts, and rules	Learning procedures	Performing skilled perceptual motorsacts	Developing desirable attitudes opinions, and motivations
Still picture	medium	high	medium	medium	low	low
Motion picture	medium	high	high	high	medium	medium
Television	medium	medium	high	medium	low	medium
3-D Objects	low	high	low	low	low	low
Audio Recordings	medium	low	low	medium	low	medium
Programmed instruction	medium	medium	medium	high	low	medium
Demonstration	low	medium	low	high	medium	medium
Printed textbooks	medium	low	medium	medium	low	medium
Oral presentation	medium	low	medium	medium	low	medium

From the table, it could be seen then that no one medium can best achieve all learning outcomes effectively. This is not to imply that the traditional teacher-talk-blackboard method is obsolete. In fact a lot of improvements can be made in that direction.

How can we account for the different effectiveness of media? Allen's findings could give us a rough guideline in the choice of media in a teaching learning situation. For example, take the concept of volume of a globe. This involves the learning of visual identifications and learning of principles, concepts and rules. For achieving the objective of learning of visual identification the choice available will be still and motion pictures and 3-Dimensional Objects. However these three media can be trimmed down to only motion pictures when we analyse the best medium for learning of principles, concepts and rules. It would then appear that motion picture is more superior because it has both audio and visual input in explaining or describing for the concept of volume. However this does not imply that the 3-D object is inferior. In fact if the teacher were to make more innovative use of the 3-D object or supplementing it with other information, it would also have a higher rating in effectiveness. However the Allen findings should not be used as being obsolete but as a guide in choice of media.

Another means of explaining for media effectiveness is by the concept of "realism". It is suggested that the more real the learning experience, the more efficient the media mode. An analysis of the types of media presently available will allow us to put these media on a scalar representation (Figure 1).

By placing the blackboard at one end of the scale and the real object at the other end, we can then place the other media in between. The suggestion here is that media plays an intermediary role in presenting as real a representation of the learning experience to the child.

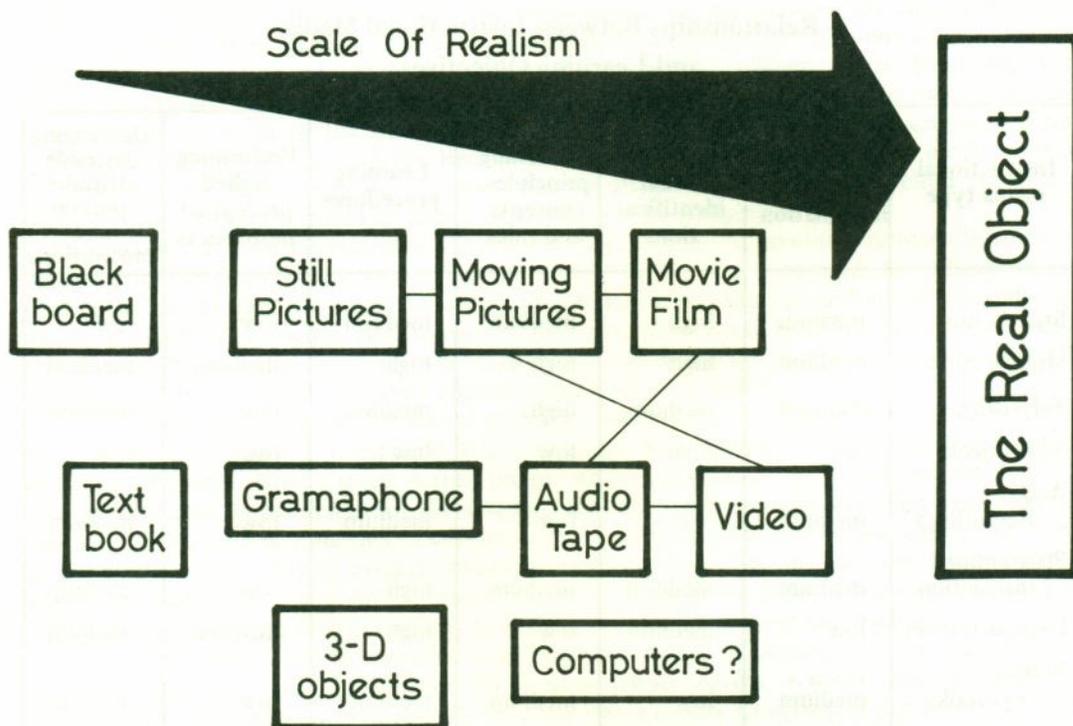


Fig. 1. Hypothetical Construct of Placement of Media on a Reality Scale

It can be seen that Figure 1 gives a close approximation of the trend in development of the various technologies towards the ultimate objective of providing more realistic learning experience to the child.

Yet a third explanation for the relative effectiveness of the various media can be constructed from the concept of media attributes (Levie, 1975; Ng Wai Kong, 1976). It is stated that each medium possess specific attributes and the understanding of media attributes can lead to the selection of media use for a specific learning objective. For example, when a teacher wants to teach the pupils the concept trophic responses of shoots. The book diagrams would be a poor example as it does not possess the attribute of "Realism Cue Characteristics" in the area of motion. The more appropriate media would be the actual plant which however illustrate the movement too slowly. Hence a speeded-up movie film would be a better choice.

It is thus necessary for teachers to get a more up-to-date concept of media and media development in order to make more use of media already existing in schools. Most schools, institutions, resources depots and libraries in the country do have some, if not all the media listed in the table. So how is it that there is still a low incidence of use of multi-media by managers of instruction and information disseminators and learners. There are literacy campaigns but what about campaigns to improve visual and aural literacy?

A number of probable problems that hinder widespread implementation of media programmes can be identified.

These are:

- A. Relative "newness" of media in the country.
- B. Lack of guidelines for media implementation.
- C. Built-in inertia in existing book-based systems (including people).
  - (1) Traditional librarians would not risk welcoming media packages into the "Book World" if they themselves are not introduced into media programmes.
  - (2) Present administrators and people of influence are of the book-based era. They have to be convinced of the benefits of media in order to advise on integration of media.
- D. People tend to retain traditional values and are generally "afraid" of technological innovations.
  - (1) The rapid proliferation of media apparatus and software should be an obstacle to anyone not familiar with new media.
  - (2) Rise-and-fall of new systems are plentiful, and thus the accumulation of wastage in personnel and fundings.
  - (3) Why risk the funds on systems that are still "experimental"?
- E. Lack of media specialists in this field.
  - (1) Who is willing to commit himself to any one medium when so many commercial products are "ephemeral".
  - (2) Many still remember the decline of the teaching machine, open reel to cassette tapes etc.
- F. Physical constraints in buildings could impede space development for media package.
- G. For some "one-shot" media e.g. live TV broadcast time-tabling for viewing is critical.
- H. IT IS COSTLY ..... INITIALLY

To sum up the feelings of any interested innovator of media, the following statement would provide food for thought. "The educational scene is littered with the relics of once fashionable wagons that rolled into town covered in bright ideas upon which educators jumped on in the hope that they would be carried into a heaven of educational advancement, hitherto undreamt of. These bandwagons were often – but not always – built upon weak chassis and their subsequent collapse was greeted by the sage onlooker (the non-innovator) with a cynical wink. He's seen it all happen before". The innovator is justifiably reluctant to embark on costly media programmes in a field that is still in a state of rapid flux.

What can educators, librarians and those who have a brief taste of the emerging media technology do about effecting implementation of such media in the system? We must understand the roles of media in the modern world. It is not just enough to say that advanced nations have committed 5% of their educational budget on media built-up (note "The Fourth Revolution" – a publication of the Carnegie Commission on Higher Education, 1975) and we have to follow suit as the pressure to integrate media programmes is inevitable.

Let us list some of the possible roles of today's media.

- A. They present a continuum of the reality perspective and thus bring about more meaningful learning.
  - (1) Media can bring about the bridging of the gap between the learner and the content.

- B. They provide meaningful alternatives for learners of different aptitudes towards learning the same content via different media.
  - (1) Learners react differently to different media. Perhaps some may be still more comfortable with the printed text.
  - (2) New skills have to be developed by individuals in attending to the various media e.g. listening to a tape.
- C. They are in a variety of modes, present information more truthfully when carefully selected e.g.:
  - (1) A model of a globe would best illustrate the attribute of three dimensionability than a thousand words.
  - (2) If all five senses are utilized in learning a concept the chance of success is higher than learning through two common senses (audio and visual).
- D. They can be exploited to suit the communicator's aims e.g.:
  - (1) Slow motion events like blooming of flowers can be accelerated by interval photography. Similarly high velocity events can be slowed down.
  - (2) Models, diagrams and photographs are not only able to show us places we cannot visit, they also magnify things, reduce huge objects to reasonable size for viewing, and see the interior through cutouts.
- E. Just as our buildings shape our behaviour, the emergent media technology shapes our outlook in reading learning habits.
  - (1) The "Open Classroom" mode of instruction is highly resource based and proven to be capable of educating the child just as well, if not better, than the traditional means.
  - (2) As society is more and more technologically oriented, learning environment will have to be compatible with such needs.
- F. The Newer Media e.g. films, tape, videotape, computer systems are limitless depository of information and will in the long run prove to be cost-effective as well as objective oriented. In contrast storage-retrieval systems by the conventional printed word form will be less and less manageable and space-inefficient.

What are the trends identifiable in the integration of media in institutions? A few examples can be cited here.

- A. The expanding Educational Television broadcast service of the Ministry of Education. Educational Television is looked upon as a means to provide equal educational opportunities for all schools, be they rural or urban. Viewing audience has increased in the last few years as television sets are made available in all schools. Problems in the system are time scheduling and viewing facilities. An interesting suggestion here is that if the children cannot view the programme, why not encourage teachers to view the repeat programmes in the afternoons as a form of IN-SERVICE as well as self-improvement. The best thing about the programme is that it is free and literature is freely available on the lesson content and methodology.
- B. Increasing awareness of the possibilities of media in improving teaching-learning effectiveness. More and more schools are embarking on developing 'Bilik Pandang-Dengar' for television viewing and local resource production. Some primary schools have made their own cassette-copies of Educational Radio Programmes for classroom use. Local resources production are on the increase as teachers prepare materials that are cheap and reutilizable. What's more, time is saved in subsequent use.

- C. Recent overhaul of Teacher-Training courses to place emphasis on audio visual education. Have similar trends been identifiable in training of school librarians and the para-professionals?
- D. The Educational Technology Unit of Universiti Sains Malaysia is a good example of a university body crystalizing its needs for media services in its teaching programmes. This is further supplemented by the Media Service division of the University Library to coordinate acquisition of software for the wide ranging courses available in the campus.

If these examples are sufficient to convince one to rush into media programme, then *don't* rush in. Sit back. There are a number of constraints one have to consider before making any rational decision.

- A. No one medium is best for all purposes.
- B. Media selected should be able to achieve the stated objectives.
- C. User familiarity with the equipment may be a deciding factor.
- D. Media used must fit the capabilities and learning styles of the learner.
- E. Are the facilities and spaces around suitable for the use of that medium?
- F. Does the media content provide stimulus for the learner to continue further on his own initiative?

Notice that most of these constraints in fact pose open-ended questions. One would be discouraged to embark onto media programmes if one is not ready to accept the challenges of the new media. Teaching and learning from today's media in fact open up many possibilities to the teacher, the librarian and the learner. Some of these can be very rewarding, some are nagging frustrations and some simply develop on their own. The seeds of media technology are here in this country. We cannot turn the clock back. It would serve us better if we understand the implications of the innovation before us and guide the different learners along the right way to learn.

#### Note

1. A medium (*plural*, media) is any intervening material that conveys, processes or rearranges, any information (utilizing the sensory channels, singly or severally) from one source to another.

#### References

- Allen, W.H. "Media Stimulus and Types of Learning". *Audio Visual Instruction*, Vol. 12, 1967, 27-31.
- Carnegie Commission on Higher Education, *The Fourth Revolution* New York: McGraw Hill, 1972.
- Levie, W.H. "How to Understand Instructional Media". *Viewpoints*, Vol. 51, No. 5, 1975, 25-39.
- McLuhan, Marshall. *Understanding Media: The extensions of Man*. New York: McGraw Hill, 1964.
- Ng, Wai Kong. "Media Attributes as Criteria for Selection of Media". *Malaysian Journal of Education*, Vol. 13, No. 1/2, 1976. 101-110.
- Shannon, Cloud, and Weaver, Warren. *The Mathematical Theory of Communication*. Illinois: University of Illinois Press, 1949.

#### Additional References

- Brown, J.W., Lewis, R.B., and Harchleroad, F.F. *AV Instruction: Technology, Media and Methods*. 4th ed. New York: McGraw Hill, 1973.
- Cable, Ralph. *Audio Visual Handbook*. London: University of London Press, 1965.
- Klansmeier, H.J., and Ripple, R.E. *Learning and Human Abilities*. 3rd ed. New York: Harper & Row, 1971.
- Minnor, E., and Frye, H.R. *Techniques for Producing Visual Instructional Media*. New York: McGraw Hill, 1970.