INFORMATION SPEEDUP AND THE HIGH SCHOOL

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THAT we are in the midst of a revolution in communication should be at this point in time an accepted fact. All around us we see the overt effects of the development of our electronic technology on modern life.

From our living rooms we participate vicariously in an upward thrust from a launching pad and from space our man-made satellite neighbors direct-dial us back on an interstellar party line. We share simultaneously and vividly in a war between India and Pakistan, in violence raging through our cities and tension in the face of a Ku Klux Klan leader as he faces the camera lights. Dos Passos once wrote of a "camera eye" which moved across the city revealing its innermost heart.

In such a way our modern media of communication dominate the current scene, extending our senses, as Marshall McLuhan put it, "in a global embrace, abolishing both space and time as far as our planet is concerned." [1]

Most of us have not thought of communication media in terms of McLuhan's "global embrace." The television set sits in its usual place in our living room without our realization of its potential to "abolish" space and time. Yet McLuhan's point remains a teasing one. Do our electronic media have far-reaching subliminal effects which change our character as individuals and thereby change all our institutions including our schools?

Perhaps a hypothesis can be at least partially suggested by observing certain changes which seem to be taking place in the communication environment of the secondary schools.

Information Speedup

Information in the sciences and the social sciences is doubling every 10 to 15 years. Libraries are currently grappling with the problem of information storage. Computer systems and other electronic methods for locating articles, books and papers are being developed.

A great battle over the revision of the copyright law is in progress because of the fear of authors and publishers over the effects of photocopying devices

[1] Marshall McLuhan. *Understanding Media: The Extensions of Man.* New York: McGraw-Hill Book Company, 1964. p. 3.

which can produce thousands of perfect, inexpensive copies in a fraction of the time it takes to produce an article or a book. Scientists, scholars, and librarians are besieged by an overwhelming mass of printed material which daily crosses their desks.

What response is the high school making to this explosion of information?

Change in Structure Needed

Few proposals for nongraded programs in secondary schools have as yet been placed in operation. However, those which are functioning, such as the high school in Melbourne, Florida, for example, have attracted widespread attention. It now seems clear that the structure of the secondary school, with its rigid patterns of fifty-minute segmentation and separation, cannot accommodate the new multi-media learning systems which represent the significant beginnings of revolution in educational communication.

As a response to this condition innovations have been developed or are under way in most of the so-called subject areas of the secondary school.[2] In trying to decide what is really new about these so-called curriculum "reforms," many educators have concentrated completely on new formulations within the subject areas (structure of the discipline) and have not seen clearly the significance of the form or format which is implicit in the new learning systems.

It would be impossible to "program" the old physics consisting of facts about electricity, etc., by using The Physical Science Study Committee materials, which include paperback books, films, filmstrips, monographs, and laboratory manuals developed as a communication system with the learner "programmed" as an insider who shares in the explosion of knowledge. Thus the communication media themselves become part of the system of learning and act to shape the organization of knowledge for the learner as he moves through the learning tasks within the system.

This concept of "discovery" which lies at the heart of many of the new curriculum programs is not a new concept in American education—it is an old concept too little realized. The revolution in communication has made "packaged" discovery possible by the design of new multi-media learning sys-

[2] John Goodlad. *School Curriculum Reform in the United States.* New York: The Fund for the Advancement of Education, 1964. Passim.

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tems. In so doing, learning outcomes have shifted from student memorizing to student discovery.

The materials produced by the University of Illinois Committee on School Mathematics, for example, are designed to lead students to discover principles for themselves. As two of the designers note:

> Precision in exposition is something we expect of the textbook and the teacher, not the learner. Precise communication is a characteristic of a good textbook and a good teacher; correct action is characteristic of a good learner.[3]

Paperbacks

In high school English programs, learning systems consisting of paperback books have been introduced by several publishers. The Scholastic Literature Units developed by Scholastic Book Services are learning systems of 110 paperback books which involve the learner totally as a participant in the exploration of a relevant theme such as "High Adventure" or "Small World," diversifying learning experiences in literature and writing through small group and individual reading.[4] The paperback book (organized into a new type of learning system) proposes new relationships between teachers, books, and students in the English classroom and thereby threatens an established hierarchy of traditional patterns in the teaching of literature.

The paperback book itself may be considered an important part of the revolution in communication. Its very presence produces unusual effects on student learning. Such was the finding in the recently completed New Jersey School Paperback Experimental Study. In this statewide study 40,000 paperback books were introduced into 50 schools where teachers, for the most part, had not previously used paperback books as instructional materials. Although in each school only certain groups participated in the experiment, the effects of the simple presence of these new books in the schools were unexpectedly far-reaching.

> Great interest was aroused on the part of non-participating teachers and students. More reading took place in study halls and other waiting situations. Stimulated teachers to broader reading to keep up with the kids. (*sic.*) All of our students' reading interests seemed to be stimulated by the paperbound book project. The English Department developed a reading list based upon the results. Classes other than those designated to participate in the program have used the books. Staff members have gone in to borrow the books; individual students enrolled in the school have asked for the privilege of borrowing the books.[5]

It seems clear that the simple introduction of a new communication medium into a school can change the very texture of the teaching-learning situation, producing new and often unexpected effects. Such effects, if understood, can be used to produce desired results.

In the New Jersey experiment teachers reported curriculum changes made as a result of using paperback books.[6]

[3] Max Beberman and Herbert Vaughn. *Unit I of High School Mathematics* Teacher's Edition. Urbana: University of Illinois Press, 1960.

[4] Scholastic Book Services, 50 W. 44th St., New York, N. Y.

[5] Max Bogart and Rychard Fink. *Paperbound Books in New Jersey Public Schools.* Trenton: Department of Education, State of New Jersey, 1965. p. 31.

[6] *Ibid.*, p. 31.

The types of changes reported (in rank order) were: (a) more individualized reading; (b) a continuation of classroom libraries; (c) the establishment of new classroom libraries; (d) greater emphasis on thematic rather than the chronological or types approaches to literature. In addition, many teachers noted "a considerable improvement in the students' abilities to communicate orally and in writing. Highest on the list of reasons teachers gave for these important changes in curriculum was "the greater variety of flexibility afforded by paperbound books." [7] The "variety" and "flexibility" of the paperback (as a new medium of classroom communication) forced many teachers to read new books and reread familiar books. In turn, they initiated individualized reading programs which produced positive changes in students.[8]

New Processes

Changes in the processes of teaching and learning and consequently in learning outcomes are happening as a result of the revolution in communication. The resulting information speedup has changed the nature of modern society to the extent that the young people in our schools today are very different from those of yesterday. The screen and TV image, the comic strip, and the transistor radio surround them with various combinations of sound and symbol. From earliest childhood they experience this electronic environment as a normal one to which they can respond and which they can learn to control. Only later in school do they confront and grapple with the conventions of print.

[7] *Ibid.*
[8] *Ibid.*, p. 39.

It is possible to estimate the effects which modern media have on social organizations such as the school. As McLuhan states:

> Lack of homogeneity in speed of information movement creates diversity of patterns in organization. It is quite predictable then, that any new means of moving information will alter any power structure whatever. So long as the new means is everywhere available at the same time, there is a possibility that the structure may be changed without breakdown. Where there are great discrepancies in speeds of movement; as between air and road travel or between telephone and typewriter, serious conflicts occur within organizations.[9]

The speedup of information in the society outside the school is reflected in the new curriculum projects in biology, chemistry, mathematics, and those soon coming in English and social studies. The new curriculum projects involve new multi-media learning systems. These systems imply that basic alterations are necessary in the existing highly institutionalized relationships among teachers, students, and text materials in the modern secondary school.

If teachers are to use their own specialized knowledge and make use of the new learning systems, a variety of changes in the structure of schools must take place. The present familiar format of the secondary school is ill-equipped to deal with the revolution in communication.

Caught in the grid of the "fifty-minute hour," teachers and students rush madly past each other trying ineffectively to digest a diet of knowledge

[9] Marshall McLuhan. *Understanding Media.* New York: McGraw-Hill Book Company, 1964. p. 91. Copyright © 1964 McGraw-Hill Book Company. Used by permission.

sliced into what must often seem meaningless fragments.

The direction of development in the secondary school should be toward making it a community where students and teachers can have the time to enter into a meaningful dialogue, where extended periods of individual reflective study are truly possible and where the classroom can become a place, not merely to receive information, but to organize and interpret it.

It is not the purpose of this article to suggest types of experimental structures which might be developed in secondary schools to accomplish these ends. However, it seems clear that the direction of change should be toward increased autonomy of both teacher and learner in the utilization of the new learning systems. After a comprehensive analysis of the social organization of the schools Katz concludes:

> We are suggesting a perspective on schools which deliberately focuses on diversification. Diversification is an idea which brings to mind the popular, journalistic practice of the amorphousness of modern society with its diversity of reference groups, values, leisure and work pursuits, and lack of integrating mechanisms and commonalities. The seeming lack of order is humanly frightening but scientifically alluring because it beckons for the discovery of an order amid the chaos.[10]

If the secondary school is to accomplish its mission in our society, in a world of information speedup, major changes must be made in its structure in order to enhance the autonomy of both teachers and students as they work together.

[10] Fred E. Katz. "The School as a Complex Special Organization." *Harvard Educational Review* 34: 445; Summer 1964.

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