



Improvement of Educational Practice¹

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The approach to the improvement of educational practice is dependent on how educational practice is viewed. One view of educational practice sees it as the maintaining of an educational system, or some part of that system, such as a curriculum design, evaluation instrumentation, a teacher role, or instructional materials. On the other hand, educational practice can be viewed as a series of related activities, each designed in relationship to the other, with the expectation of producing certain pre-determined outcomes in students' behavior.

The first approach has the shortcoming of introducing educational practices that may or may not be relevant to desired outcomes. The possibilities for systematic evaluation are very few. The relevant judgments as to cause and effect are almost impossible to document.

The second approach allows the construction of a series of models based on the nature of the students and outcomes desired from educational operation. Taken as a whole, some of the elements of the model would appear to be the following:

1. Outcomes desired.
2. Characteristics and needs of students.
3. Hypotheses regarding means to produce outcomes.
4. Experiences deemed necessary to produce outcomes.
5. Characteristics of the learning environment required to provide experiences.
6. Tools and materials required to provide experiences.
7. Teacher roles in managing the learning environments.
8. Other human roles in operating the learning environment.
9. Evaluation systems to determine outcomes achieved.
10. Instrumentation to measure the relationship between outcome and means.
11. The systematic development of instrumentation to measure the effectiveness, efficiency, and costs of means in securing outcomes desired.

When one approaches the proposition of what is the "best" way of conducting an educational program, more often than not he deals primarily with one item, or a few items, of the model without relating to the other units in some specified framework. Thus, prescriptions for changing curriculum, or for the use of a variety of types of instructional materials, or for different ways of managing the learning environment are proposed, but rarely is an analysis made of the relationships among the several elements of a model.

Defining terms is an arbitrary but necessary part of the verbal treatment of issues relevant to improvement of educational practice. "Change," "innovation," and "improvement" are three critical terms that, unfortunately, are sometimes used as if they were equivalent. "Change" is the most expansive of the three terms. "Innovation" and "improvement" are more restrained words, each in a different way. Any alteration of the status quo constitutes change, whether or not the alteration is innovative or is an improvement. Any alteration or change which brings an identifiably *new* element to the situation would be an innovation. In an objective analysis of a social change, "innovation" is a

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value-free term. It should not be used to connote a bettering or worsening of the situation. The term implies only a change which has some element of newness or novelty. Even to use “innovation” to denote an unproved alteration or an experimental change is confusing, since the simple word standing alone should not be given, by association, the negative tone of “unproved” or the positive tone of “experimental.” The only element that “innovation” adds to “change” is the matter of newness. “Improvement” is the only strongly denotive term among the three. This word is strongly value-oriented. It would be easy enough to establish that a social situation has or has not changed and only slightly more difficult to establish that a change is or is not innovative, but to establish that a change, whether or not innovative, is an *improvement* is a much more complicated matter.

There is a need to use these three terms with care and discrimination, because even in their casual uses, they reflect motives. Each of the terms, “change,” “innovation,” and “improvement,” when contained in a statement of aspirations, reveals a different set of motives. The desire to change reflects dissatisfaction with the status quo. It indicates little more than a willingness to exchange a present situation for another situation. It implies very little value-orientation other than the devalued existing status quo.

The intention to innovate reflects a motivation to achieve distinctiveness through newness. It shows dissatisfaction with, or rejection of, the status quo in the more precise terms of predictions or judgments of its archaic character or its obsolescence. “Innovate” implies the sort of change that updates or brings uniqueness. It does not necessarily imply a call for prior experimentation, investigation, or evaluation with respect to any terms other than the criterion of newness.

The motives reflected in the correct use of the term “improvement” are essentially value-based. To want something to be improved reflects both negative and positive valuing. The status quo is perceived to have aspects of negative values. The needed change is given positive value. This value represents the anticipated gains in conformity to a “good” model of activity which they will help produce. Thus, there are at least three elements present in the correct use of the term “improvement”: the *change* of the status quo, *direction* of the change toward a desired model, and *assessment* of the results of the change. It is difficult to imagine a bona fide improvement in an educational enterprise lacking any of these elements.

In summary, the terms have these meanings and reflect these motives:

change: Alteration in order to make different.

innovation: Alteration in order to renew, make new, or add new elements.

improvement: Alteration in order to:

- (1) Change an inadequate status quo.
- (2) Direct changes toward a projected model, and
- (3) Assess the outcome against the former status quo.

Improvement, then, is a value-based concept. Evaluation of alteration to establish whether or not improvement can be claimed demands separate assessment of goals, process (methods of arriving at change,) and outcomes of the changed entity. With special reference to the field of education, defining “improvement” raises the questions about the value and relevance of goals, and the efficiency and effectiveness of procedures which attempt to reach these goals.

Varieties of Obsolescence. Educational institutions can be obsolete in many ways. Obsolescence of goals or functions, obsolescence of methods, and obsolescence of management are three problems confronted by the educational administrator in a changing society.

Whether or not the basic values of a society are changing, the functions of the institutions within the society are constantly in process of being reassigned among the institutions. The secondary school’s responsibility for the function of vocational efficiency was commonly accepted earlier in the twentieth century—but before the century is out, this function may shift away from the secondary

school to some new vocational-training school for certain students and to the university for others. Administrators and teachers, who continue to orient the institution toward functions that have or should have shifted to some other institution, contribute to the obsolescence of the school.

Another aspect of obsolescence of functions is that of refusing to accept new or newly assigned functions for the institution. Whether or not the secondary school is the “right place” for driver education, the legislatures of many states have assigned the function of developing driver proficiency to the local high school; thus, while refusing to accept the responsibility might be academically defensible, the high school which lacks such a program will tend to be obsolete.

The functions of most educational institutions have not been adequately defined. Much might be gained from a thorough taxonomic analysis of each level and kind of school within the American society.² The lack of clearly specified and commonly held functions and goals in education makes functional obsolescence difficult to diagnose.

Obsolescence of method gets much attention. The simplistic argument for employing new procedures seems to be very attractive: the new way should be employed because it is new; the old way should be abandoned because it is old. Motivation to adopt the “new” may be like the legendary motivation for mountain climbing (“because it is there,”) or it may be a compulsion to identify with the new modes of culture. Regardless of motivation, the new methods are taking hold. In a technological age, classrooms are still largely manned by those who seem suspicious of technology. Yet, the current changes in method are increasingly technological.³ Television has entered the classroom, a variety of optical projection devices are in common use, the tape recorder is running, the computer is on the threshold. It is tempting to think of the lecture and the blackboard as being obsolete. But the deeper issue of method obsolescence is elusive. The shifts in perceptual styles and learning processes which may be already upon us demand a re-assessment of the instructional environment of today’s schools.⁴ The loss in effectiveness of the institution that has become methodologically obsolete can be serious.

The school is acquisitive and the classroom is absorptive. Problems are created when technological changes and new curricular units provide little demonstrable change in efficiency or effectiveness. Problems also arise when new curricula and techniques are added to the program of the school without any discarding of less effective ways. The institution which cannot effectively balance its input of the new with its discarding of the old is not likely to operate efficiently or economically. Finding ways to maintain fiscal integrity in the face of a potential overload of new functions and new methods is a compelling administrative problem.⁵

Educational institutions must find efficient balances, must seek ways to compare the relative merits among alternative expenditures, and must determine what functions are to be reduced or eliminated in order to make room for the new. A management system incapable of dealing with these issues risks becoming seriously obsolete. Much innovation begins with some sort of cost-effectiveness model in mind. Team teaching, instructional films, educational television, programmed instruction, individualized scheduling, and other innovations to come, represent to teachers additional ways to add variety to the basic teaching procedures. To the efficiency-minded administrator, they represent ways to supplant part of the present teaching procedure. Therein lies the conflict.

Many teachers seem overly ready to resist anything which either is difficult for them to understand or challenges their superiority or autonomy.⁶ Unless an innovative procedure or device is

² Bloom, 1956; Krathwohl, et al, 1964

³ Goodlad, et al, 1966

⁴ Culkin, 1967

⁵ Norton 1963

⁶ Miller, 1967

an “aid to the teacher,” it is likely to be put on the closet shelf. Management which cannot overcome this human resistance to change is not likely to stimulate much improvement in educational practice.

But teacher resistance is not the only barrier to educational improvement. Another is the fault of management and is attributable to the incapacity of leadership to inject new ideas. The roots of this incapacity may lie in lack of imagination, lack of external viewpoints (becoming ingrown,) or failure of the internal communication processes.

Change and potential change threaten people. Growth and development of an organization is easily stalemated when management stimulates beyond the tolerance of the subordinate staff. Impasse occurs when the worker interprets pressure for change as management’s inability to appreciate the worth of his present contributions. The issues of improvement and leadership-style are intertwined. Management which cannot effectively infuse new ideas is ineffective.

Forces for Change. Seeking progress and development through deliberate change and wide-spread applied experimentation with untried procedures can be interpreted as a reflection of the American historical tradition. If this be so, the tradition is becoming more a recognized attribute of institutionalized education. Feared and resisted for many years, expanded federal aid to education is now a reality and, ostensibly, is largely employed as an incentive and resource for change. The “traditionalist” finds it hard to adjust to the newly recognized thrust for innovation. The scholar, who requires defensible evaluative evidence for assumptions about expected results of proposed change, is similarly uncomfortable in the current situation.⁷

The current topical emphasis on innovation can be taken as a sign of vitality in the educational enterprise and as evidence of a basic weakness in contemporary education: the incapacity to evaluate proposed change. This latter is reflected in the trends of research on innovation. At the heart of the current spate of studies of innovation is the concept of “change processes.”⁸ Many researchers are viewing innovation as a problem of process more than as a question of *substance*. Studies of change are commonly quantitative, rather than qualitative.

The emotional impact of Russian space technology has energized the forces of change in American education. Since 1957, there has been an acceleration of major modifications in the educational system. Uneasiness about the soundness of the American educational establishment has made it increasingly unpopular to resist change. The ambivalence of the public toward the higher costs of education consequent on change has served as a major retarding force. And the style of inducements has changed: there seems to be less of the hostile post-war attack on teacher education and of the bitter vilifications of the McCarthy-era curriculum purges. In their place, there are more “bandwagons” on which the change-minded members of the educational community take stimulating rides.

A drive toward a more technological and technology-utilizing curriculum has had wide public support. The curricular swing has been toward the technology-related subject. Thus, the objectives of two educator factions have been served: those whose concern is for a more organized and more up-to-date approach to science and mathematics, and those who advocate a wider utilization of technological aids to instructional communication. A secondary effect has been the acceleration of experimentation with patterns of instructional organizations and management.⁹

The subject-matter competence demanded for effective teaching of the new curricular materials places the current general-purpose teacher in a difficult position. At the same time, increased use of non-human instructional mediation allows—perhaps demands—an alternative to the old

⁷ Harris, 1963

⁸ Brickell, 1961; Carlson, 1965; Kurland & Miller, 1966; Merz, 1967; Rogers, 1962

⁹ College Entrance Examination Board, 1966; Heath, 1964

concepts of teacher role, self-contained classrooms, and compartmentalized learning. Thus, the field of education is opened to the new approaches of human engineering and man/machine concepts of system analysis and system development.¹⁰

If processes of social change can ever be orderly, those observed in current educational innovation must be described as disorderly. Lacking adequate theory, such vital elements as instruction, educational-resource deployment, and the associated cost-effectiveness relationships are affected by unrelated changes. Evaluation is inadequate to describe the effects, to say nothing of predicting consequences.

In seeking ways to make the processes of educational change more orderly, a major handicap exists within the social structure of the school. Carlson (1965) finds that the social status of the chief decision-makers functions as a barrier to their seeking advice. He further cites as major barriers to educational change, the absence of a “change-agent,” the weak knowledge base in education, and the “domestication” of the public school as a non-competing passively accepting institution.

Motivation for Improvement. There are two fundamentally different concepts which may be at work in an educational organization that is concerned with improvement: the concept of perfectibility, and the concept of dynamic equilibrium.

These concepts are essentially descriptive tools for theoretical analysis of social institutions. The concept of perfectibility is essentially static, inasmuch as it assumes that a realizable ideal state exists, which, once achieved, would require no further change.

On the other hand, the concept of dynamic equilibrium sets up an expectation for continuous change. The institution is seen in a certain relationship, or set of relationships, to larger social entities, functions, and needs. In the introductory paragraphs of this paper, the elements of a model were briefly outlined. These items illustrate the range of activities which must be kept in balance in an equilibrium model. As the social entities, functions, and needs change—and regardless of the forces which make them change—the educational institution is expected to respond with appropriate alteration to maintain its balanced role of interdependence within the social whole.¹¹

In the practical sense, the equilibrium concept motivates people to alter the educational institution continuously so that it can contribute optimally toward meeting the ever-changing needs of the society. The concept is dynamic in that it assumes a constant state of change; it assumes a developing set of functions and needs in the social whole to which the institution must be constantly re-adjusting.

The fundamental difference in these two concepts of improvement leads to correspondingly different perceptions of what it means to “catch up” or, more precisely, to improve a social institution which is “behind the times.” In the first concept, “catching up” is the temporary problem of overcoming a deficiency. In the second concept, the constant task of “catching up” is a permanent problem of staying in a proper relationship with the rest of a changing society.

It is not unusual to find educational leaders and segments of the public talking and acting as if the schools are perfectible.¹² But there are likely very few who would argue the hypothetical proposition that a “perfected” school in 1940 would still be adequate today. In fact, there may be a danger in a school’s becoming too finely tuned to the needs of a given moment in history. When an educational institution becomes so thoroughly adjusted to a given time and place, it may become “stabilized.” Rather than maintaining a dynamic equilibrium, it can become rigid in a moment of static balance. Even as a biological organism rejects an alien organ, the educational institution can become

¹⁰ Egbert, 1964

¹¹ Gardner 1963

¹² Keppel, 1966

so entrenched within a given set of functions that it rejects the incursions of the new elements that would give it renewed life for a new time.

The forces for improvement are people: people with ideas or with biases, people with hope or with fear, people who are selfish or altruistic. The mixture of these characteristics is usually very complex, and research on the forces and processes of change is a relatively new undertaking. But, clearly, the people forces are at work today. Some have stimulated far-reaching federal legislation and the needed funds to experiment on a broadly based front. Some declare that the nation's internal difficulties reflect basic weaknesses in its educational systems. Others see in education the only hope for healing the world's ideological schisms. Whether these people work together or neutralize one another in their disagreements, they all seem to recognize that education has a substantial contribution to make toward solving the problems of an obviously changing society.

Thus, manifold stimuli for educational change have arisen. Some of the people forces are content with change. They contend that nothing can be worse than what we now have. Other forces demand innovation: it is not enough merely to change; there are so many new things we now know how to do and so much new information to teach. Still other people forces require some assurance that change is improvement: education, they claim, is too important to trust to the forces of haphazard change or unevaluated innovation.

Areas of Innovative Change. Hardly an area of the educational establishment has been untouched by some sort of development, experiment, or arbitrary change since mid-century. Developmental activities include the use of educational television ranging from single-school, closed-circuit operations, to wide-area aircraft transmission, and plans for state-wide cable linkages. Massive efforts have been expended on curricular re-organization of the content in mathematics, biology, physics, and chemistry and, to a lesser extent, English and social studies.

The use of programmed instruction has increased. The teaching of foreign languages has been deeply affected by audio-lingual approaches made possible by tape recorders set up as "language laboratories."¹³

The utilization of teaching personnel has been changed in various patterns of "team teaching." Especially in the secondary school, there has been a shift of attention to the individual learner and a provision for more or less independent study situations ranging from a varied and daily modified "flexible schedule" to deliberate teaching of independent investigative strategies ("discovery methods.")

To accommodate these new techniques and procedures, a somewhat different educational plant is needed. School plant planners have busily moved toward a more campus-like school layout, adding more leisure and independent-study facilities, clustering schools of all levels within "educational parks," and laying out classrooms in team-teaching clusters with screens and sliding walls for additional breaking down of space for small-group activities. The lecture-television hall idea has been borrowed from higher education to become a dominant feature of new senior and junior high schools. More "middle schools" are coming into existence, drawing fifth-, sixth-, and seventh-grade children (sometimes eighth-grade, as well) into a separate organizational unit.

Audio-visual devices are being used increasingly. Their basic forms have been changed very little in the past decade, but their convenience in use and the increased availability of teaching materials for use in them has led to wider acceptance. It is widely speculated that computer-controlled devices will constitute the next large-scale innovation for the audio-visual field.¹⁴

¹³ Goodlad 1966

¹⁴ Goodlad, 1966; Lumsdaine, 1964; Miles, 1964; Educational Testing Service, 1965

Evaluating Change. The view of change, whether innovative or not, as being no improvement until proved to be improvement, places a high value on evaluative activity. If American education is to capitalize on the growing public consciousness of education's essential role in national survival, the next decades will be distinguished by refinements and increased capabilities of educational evaluation. Reliable and prompt feedback on the effects of changes is an essential element in an adaptive educational system.

Most important, of course, is the evaluation of any change in the educational system to determine its qualitative effects on learners and their learning. But there are other aspects of the matter of educational improvement which demand evaluation. First, there is the matter of evaluating costs in some sort of comparative terms; this evaluation can be seen as a part of the overall assessment of the "improvement" factor. Comparative study of the effects of curricular change on learning variables presents difficult problems for research design which are made even more complicated by adding the relation to cost variables.

The procedure used to induce change in the educational institution presents another problem for evaluation.¹⁵ Normative studies of the change process are now fairly common. Evaluative procedures may conceivably be forthcoming from this line of research; what is needed is a procedure(s) which can assess the effectiveness of the management of institutional change. It is reasonable to assume that decisions about ways of injecting new ideas, soliciting suggestions about change from within the staff, and stimulating and rewarding innovative behavior are vital. Thus, if the basis on which these decisions are made can be assessed, the feedback of the assessment data could help to build a more reliable basis for the selection of change-inducing management procedures.

Research on Educational Change. Treating the diffusion of educational innovation as a researchable problem was itself an innovation of the 1930s. The work published by Mort and Cornell in 1938 reflected the empirical study of school systems as adaptive (innovative) social entities. A subsequent report¹⁶ provided data concerning the "rate of acceptance" curve, based upon a quantitative concept of adoption rate changing over time, as an evidence of the waxing or waning of an innovative idea's popularity. Factors which affect the rate of adoption have become the major concerns of research in educational innovation; presence or absence of these factors is thought to be an indication of a school's disposition toward or readiness for change.

Mort's early work was coincident with the landmark studies of adoption of agricultural innovations.¹⁷ Study of the rate of adoption of technological innovations in agriculture, and the study of the rate of adoption of new educational practices, have been essentially simultaneous research developments. They spring from similar needs for data about means of interfering with the "natural" rate of change and the identification of optimal environments for introducing innovative practices.¹⁸ These two fields of research have borrowed much from each other; researchers occasionally re-discover the similarities of the two problems.

Studies of the effects of particular innovative techniques have been increasing. Carlson (1965) examined the adoption of "modern math" programs and programmed instruction in terms of an assumed "natural history" of educational innovations, in general. His emphases were upon the determinants of rate of adoption and rate of diffusion. His report underscores unpredicted consequences of adoption of the innovation. He observed that differences in the structure of

¹⁵ Harris, 1963

¹⁶ Mort and Cornell, 1941

¹⁷ Hoffer, 1942; Ryan and Gross, 1943

¹⁸ Trotter, 1934

“opinion leaders” in the two locales studied were related to the adoption patterns. He was also able to deduce a generalized description of the innovative person in the school setting.

Whether the findings of research in educational innovation (or in agricultural dissemination) can themselves be disseminated and adopted in the form of prescriptive plans and procedures for planning education improvement, is as yet uncertain.

The profession, at large, is becoming more aware of educational change, innovation, and improvement. The awareness is focusing on a series of adaptations of procedures, techniques, and equipment from other fields. Among these are two which promise a significant effect on the matter of educational change itself, making possible a more improvement-oriented change process.¹⁹

The electronic computer is being employed as an information storage and retrieval medium. It is now feasible to design dissemination systems which are selectively focused on prime users of data about educational change. More information can be handled, and handled faster, than has been possible with topical journals and unclassified reports. A further advantage is the increased selectivity available to the information searcher.²⁰ Computers can manage search problems which human efforts (and patience) would find unmanageable.

A companion trend-making development is the scientific study of information users. Communication research is contributing to thought about educational change and the decision-making functions basic to change. Investigation of the effects of information upon the roles and procedures in educational development can lead to more-informed, more-evaluable, and less-intuitive change procedures in education.

One of the basic differences between the testing of a changed procedure in education and a change in either agriculture or medicine is the place where experimentation takes place. In fields which have well-developed laboratories for evaluation of a technique or material before it reaches the dissemination phase, an ill-advised change is brought to an appropriate end before it has either large-scale public notice or wide-spread practitioner involvement. Lacking a highly organized evaluative laboratory, education often puts the dissemination step ahead of the testing. Thus, innovations can lead to wide-spread, undesirable outcomes before data about their consequences are available; perhaps the fear of this possibility is one of the more important roots for educators’ resistance to change. It is widely hoped that the Regional Educational Laboratories’ program of the United States Office of Education will serve to relieve this problem.²¹

Lippitt (1965) cites other factors which distinguish change processes in education from those in other fields. He calls attention to the necessity of some degree of change in practitioner attitudes, skills, and values if a change is to be given a fair chance; the “invisible” quality of many important innovations; the lack of an organized engineering wing of the profession; the lack of agents of change; the social pressures which inhibit change; disarticulation from other behavioral fields, and the reluctance to alter a public system wherein the public is so quick, bold, and powerful in reacting. He further identifies these models of curriculum change: retrieving expert knowledge, identifying curricular innovations, collaborative action research, experimental feasibility testing, and employing deliberate diffusion strategies.

Research Relating to Change. American education today is becoming more fluid. Social upheavals of the century have left their marks. Some even argue that producing change-oriented individuals is a requirement for the contemporary school—and in order to engage successfully in the production of this sort of output, the school itself must be constantly changing. Goslin (1965) relates this

¹⁹ Borko, 1962

²⁰ Kent, 1962

²¹ Keppel, 1966

proposition to the observable social flux: (1) increased specialization and bureaucratization, (2) demographic changes, (3) urban/suburban dichotomization, (4) revolution in race relations, (5) increased government involvement and creation of interdependent functions and (6) cultural change springing from mass media.

The status and role of the teacher have changed dramatically in the twentieth century. Trends are growing toward making the teacher less an information dispenser and more a catalyst and facilitator of independent study. The teacher's role and status are a reflection of the forces which influence the nature of education.²² The teacher is what the educational system demands; thus, study of attributes and roles of the teacher is an appropriate method of inquiry into the nature of education. Current innovations are heavily oriented toward technological advances in communication media; schools are changing both in terms of added technical resources and in terms of the management aspects of scheduling and manpower deployment which the new resources demand for any sort of efficient utilization.

The changes brought about by instructional resources relate back to forces in the social environment. Contemporary education can be seen as being responsive to (1) mass production and automation, (2) job unpredictability and technological unemployment, (3) a belief in a "good fortune" and faith in changes being for the better, (4) demands for equalized quality of instruction, (5) federal investment in technical resources, (6) concern for those overlooked by previous educational systems, (7) the necessity of organizing and more carefully selecting subject matter, and (8) the shifting of educational responsibility from the teacher to the student.²³

In an early descriptive study Ebey (1940) found the principal's opinion and the nature of the community to be the most important among eight selected factors related to a school's capability of changing. Other factors concerned teacher opinion, age, and recency of training, parent participation, and other essentially demographic matters. Ebey also identified "adaptation patterns" through his efforts to relate evidences of change in the operations of a school to factors influencing adaptability. The six patterns described in his research differ in terms of the formality or informality of the change processes, and of internal or external forces promoting the particular element of change.

Ross (1955) views adaptability as a school's capacity to take on newer and more appropriate educational practices. He has discovered positive correlations between adaptability and per-pupil expenditures, wealth of school district, percentage of business and professional constituents in community, and the school staff's years of training, travel experience, salary, and possession of personal libraries. Unlike many studies of this sort, Ross attempts to treat the cost-effectiveness of an innovative educational practice, not just its newness.

The findings which lead Ross to a generalization about the more experienced teachers being the more adaptable or innovative are not consistent with a number of other studies. For example, Willower (1963) reports a study conducted in a large junior high school which leads him to conclude that norms and standards maintained by the older teachers stressed firmness, social distance from the students, and preservation of the status quo. Further, he finds change-resistance to be less characteristic of specialists and newer faculty, who would make small-scale changes related to improving the quality of their own work.

The Role of Research in Planning Educational Improvement. Pellegrin (1965) has attempted to explain the small influence of educational research on the planning of educational improvement. He criticizes the research for a failure to attach the problems, which are seen by the practitioner, as

²² Lee, 1966

²³ Dale, 1966

crucial. He further cites low quality and lack of sophistication in research design and, hence, an output of research which cannot command the attention of the planner of change. In turn, he criticizes the planners' failure to distinguish empirical facts from values and his general ignorance of the worth of research.

Hope is frequently expressed that the impact of behavioral science research, in general, will have the effect of making educational planning more research-dependent. The sheer weight of data about human behavior will demand its own attention. Education will be permeated by the empirical facts about perception, personality, learning, social dynamics, leadership, and communication. Thus, research would have an indirect, but definite, bearing on the planning of improvement.²⁴

Such indirect impact may be slow in coming. The requisite changes in knowledge and outlook of educational administration may be a generation away, because there is no particular reason to expect major change in the low rate at which innovations are adopted in the professional training institutions.²⁵

Educational improvement continues to be a major challenge for educational research. In essence, innovation and other educational change has been a matter of treating symptoms, rather than the basic mechanisms which produce the symptoms. The current state is largely one of emphasis upon the activities of teachers without adequate reference to the outcomes or effects of those practices. Change, particularly innovation, has been largely a concern for tools, rather than for processes and functions. For example, the use of television is supposed to produce certain outcomes effectively or efficiently. Exactly what outcomes it is to produce is a matter often left untreated when reviewing television as an innovation. It is not enough to say that educational practice is improved because television is used—instead, the focus should be upon *what* improvements in the teaching and learning processes television permits or provides. Instructional techniques can easily get out of touch with the learning phenomena they purport to mediate.

Educational practice can be viewed, on the one hand, as an instructional-technique problem or, on the other hand, as a behavioral-science problem which requires a whole system of functions in order to provide a basis for improvement. The concept of teaching as a professional practice, with its basis in behavioral science, owes much to educational research. The shift from “keeping school” to practicing education demands even more from its empirical data base. The practitioner of education functions as a clinical worker: he observes, diagnoses, prescribes, treats, and evaluates. He cannot innovate or otherwise change his practice without anticipating consequent changes in the outcomes of his practice. Piecemeal innovation must give way to a broader concept of change which begins with a specification of desired outcomes, moves to analyze characteristics and needs of students, and then to hypothesize and test experiences, environments, materials, and roles in terms of the achievement of the desired outcomes.

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²⁴ Glaser, 1966

²⁵ Barrington, 1953

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