ABSTRACT
              This inquiry was conducted to develop indigenous
research methodology aimed at minimizing the gap between educational
research and practice. The intent was not to produce a final or
complete solution to the problem, but rather to suggest a procedure
which would provide partial closure. Alternative methods, including
various types of linkage systems, as well as inductive and deductive
approaches, were examined. From this examination, a process was
developed which combined theoretical-deduction and
empirical-induction with a procedure which had its derivation in
symbolic interactionist theory and methodology. The resulting
combination, referred to as "Indigenous, Interactional Research," was
designed to maximize interaction between the researcher and a
practitioner in analyzing educational experiences. In a field test of
this process, groups of adult learners were videotaped in: (a)
individualized programmed instruction, (b) group process instruction,
and (c) a combination of the two. Inductive and deductive
interactional analysis of the taped data resulted in the generation
of decision and conclusion oriented hypotheses. Such a methodology
can generate indigenous hypotheses and theories relevant to the
improvement of both educational research and practice. (Author/DG)

INDIGENOUS, INTERACTIONAL RESEARCH

James A. Farmer, Jr.*

ABSTRACT

The objective of the inquiry was to develop indigenous research
methodology aimed at minimizing the gap between educational research and
practice. The intent was not to produce a final, or even a complete solu-
tion to the problem, but rather to suggest a procedure which, if employed,
would provide partial closure.

Alternative ways to bridge the gap were examined, including various
types of linkage systems as well as inductive and deductive approaches.
Growing out of this examination, a process was developed which combined
theoretical-deduction and empirical-induction with a procedure which had its
derivation in symbolic interactionist theory and methodology. The resulting
combination, referred to as "Indigenous, Interactional Research," was
designed to maximize interaction between the researcher and a practitioner
in analyzing educational experiences.

In a field test of this process, groups of adult learners were
videotaped in: (a) individualized programmed instruction, (b) group

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New York City.

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process instruction, and (c) a combination of the two. Inductive and

deductive interactional analysis of the taped data resulted in the genera-

tion of decision and conclusion oriented hypotheses.

Such a methodology can generate indigenous hypotheses and theories

relevant to the improvement of both educational research and practice.

INDIGENOUS, INTERACTIONAL RESEARCH

James A. Farmer, Jr.

Objectives

The main objective of the inquiry reported in this paper was to
identify, adapt, and/or develop and field test a research methodology which
could potentially minimize the gap between basic educational research and
educational practice. Research utilizing such a methodology, it was hoped,
would yield decision and conclusion oriented findings which were generated
concurrently and which, therefore, would be more compatible with each other
than findings resulting from conclusion oriented research and decision
oriented research conducted separately.

Problem: A Gap to Bridge

Rapid advancement in the field of education could be anticipated if
applied research were all that is needed to make such progress. Applied
research arises from the inability of practitioners to achieve some practical
goals and derives its justification "from its orientation towards the achieve-
ment of these goals (Carroll, 1968; p. 267)." Such research has also been
referred to as "decision oriented" (Cronbach & Suppes, 1969) research since it
has as its main purpose the provision of information to a decision-maker. The
relationship between the researcher and the practitioner can be a good one in
applied research. In a description of action research, one form of applied
research, Fox (1970) has indicated that the fact that the focus of this
type of research is on the local situation and the solution of local problems
tends to limit the generalizability of the results of such research. He has
pointed, however, to the relationship which can exist between the researcher

and the practitioner in action research as a distinct advantage. According
to Fox:

> The well-planned action research project involves
> both practitioner and researcher. The practitioner
> has been in on the research at all stages, and if
> the research was successful he knows this and is
> generally willing to accept the research findings
> (pp. 97, 100).

As valuable as applied research can be, however, it alone cannot
service the full range of research needs in education. Advances in education-
al practice which result from applied research are ultimately dependent upon
advances in basic research in the field. Carroll (1968) has observed:

> It is doubtful, in educational research, that we can
> move ahead to effective educational engineering with-
> out an adequate base in fundamental research.... Par-
> ticularly where applied research seems to be yielding
> diminishing dividends, we must turn to basic research
> on the phenomena in which we are interested. I would
> propose that such research be called basic educational
> research, and that it be thought of as a part of basic
> science.
>
> It can be easily demonstrated that many of the most
> fruitful developments in applied educational techno-
> logy would have been well-nigh impossible without an
> adequate foundation in basic research. At the same
> time, some of these same developments have now reached
> a point of decreasing returns such that they need a
> new infusion of results from basic research. A good
> example is the history of so-called programmed instruc-
> tion (pp. 272-3).

Basic research which potentially can make possible a better under-
standing of phenomena underlying educational practice generally takes its
direction from the investigator's commitments and hunches. Because of this
characteristic, it has recently been referred to as "conclusion-oriented"
inquiry to differentiate it from "decision-oriented" inquiry (Cronbach &
Suppes, 1969). A lack of positive relationship between the basic researcher
and the practitioner in education can develop, however, when basic research is
undertaken. Fox (1970) has described both the nature of this difficulty and

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results of it as follows:

> Basic research typically is planned independently
> by a researcher. Once that plan is complete he
> then uses research principles to select a sample
> of settings in which he would like to do his re-
> search. But the research is his, the practitioner
> is there to function as directed, and is often seen
> as "the enemy" who can thwart the researcher by
> not functioning in accordance with the research
> needs. Therefore, the practitioner, even in those
> settings in which basic research has been done,
> typically sees it as an abstract and even threat-
> ening phenomenon (p. 100).

Certainly the right of the basic (or conclusion oriented) educational

researcher to conduct inquiries free from the constraints typically incurred

by the decision oriented researcher needs to be maintained. But is it

necessary for basic educational research to be conducted in a way that

results in an increased gap between basic research and practice in education?

Or can the independence required for such inquiry be maintained if basic

educational research is restructured to maximize the relationship between

the basic researcher and the practitioner and, consequently, minimize the

gap between basic research and practice in education? The inquiry which is

reported in this paper started with such questions, and proceeded to an

examination of the literature to identify alternative ways to deal with the

relationship between basic educational research and practice and to bridge

the gap between the two.

Alternative Ways to Bridge the Gap

Of particular help in this process was a recent report, _Educational_

Research and Development in the U.S., published by the HEW, Office of

Education (1969). The report noted that there is not much literature on the

relationship of research to development, or of development to research, or

on the relationship of both to the improvement of education. According to

the report, the models which do exist tend to fall into the following

three main categories:

> (1) The first category tends to view the goal of
> educational improvement as being dependent
> upon adequate diffusion mechanisms which re-
> quire the invention and development of tested
> innovations to diffuse, and which in turn
> depend upon the adequacy of the research base.
> Such models as these can be called linear or
> dependency models. The most representative
> and well-known example...is that developed by
> Guba and Clark.
>
> (2) A second type of model sees essential differ-
> ences and disconnection between the research,
> development, and dissemination functions....
> The most recent example of this kind of model
> is that developed by Hendrick Gideonse.
>
> (3) A third category...might be designated by the
> term "linkage." In this kind of model the
> close interrelations of research, development,
> and disseminations are stresses.... Models in
> this category may have a tendency to be per-
> former-oriented and to stress the importance
> of individuals in a research-development-dis-
> semination continuum. (This type of model
> is represented by the writing of Norman Boyan,
> of Robert Glaser, and of Raisbeck) (pp. 5-6).

These models indicate basic ways by which education has attempted to

bridge the gap between research and practice. Each seeks to solve the pro-

blem by redefining and/or improving the relationship between three separate
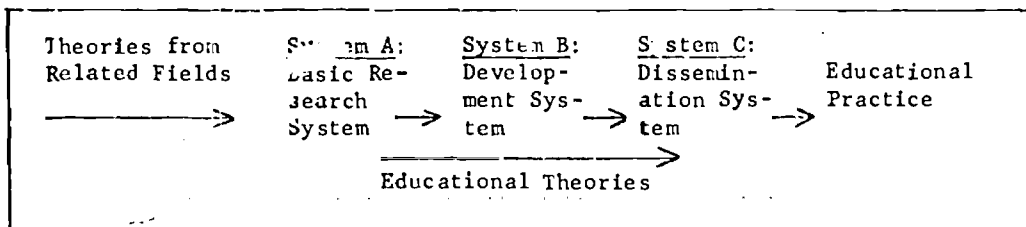
systems, as indicated in Figure 1.

Figure 1. Linkage between three separate systems to
relate theory and practice in education.

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While the characteristics of one or more of the models presented in
the report may seem theoretically attractive, the results which have been
achieved to date from their use are less than encouraging. Fox (1970) has
observed:

> We have ample research in some of the (areas of
> education), although little research in others.
> But the intriguing thing is how seldom changes
> are based on the research, and how seldom the
> research stimulates change, or how seldom change
> is delayed until there is a research basis for
> deciding if and how change should occur (p. 72).

From this account it would seem that the flow of information from
system to system is frequently not operating adequately. Perhaps the fact
that the systems are envisaged as separately functioning, albeit linked
entities is a source of difficulty. More must be linked, it would seem, than
just what each system produces. Perhaps a more adequate relationship can be
established between research and practice through systemic rather than linear
linkage. Such an approach would call for a system which would make it poss-
ible to achieve not only desired change in educational practice but also
similar change in the structure of knowledge concerning education simultan-
eously. One way of depicting such an interrelationship is indicated in
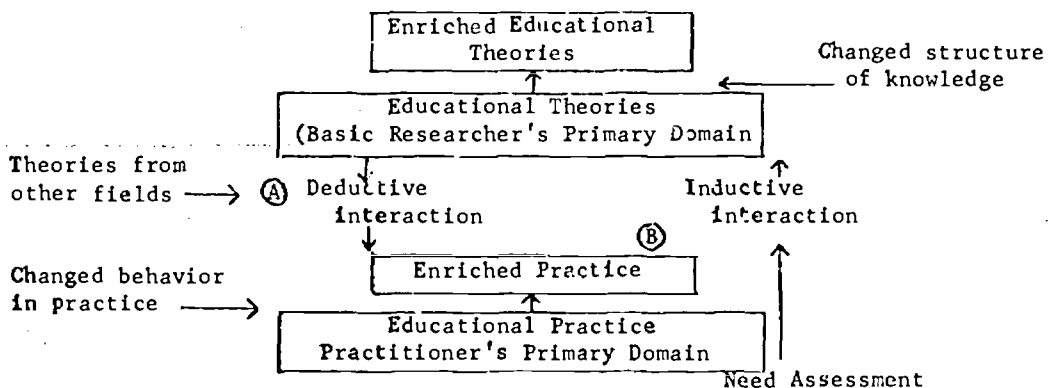Figure 2.

Figure 2. Relationship between Theory
and Practice in Education

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From the point of view reflected in Figure 2, the nature of basic

educational research and its relationship to educational practice can be seen

primarily as a deductive process, an inductive process, or a combination of the

two. The relative advantages and disadvantages of each are considered below.

1) Basic Educational Research as a Deductive Process

Basic educational research can be seen primarily as a deductive pro-

cess in which theories from other fields are analyzed and utilized in order

to more adequately understand education. In turn, some form of "linkage"

procedures is needed to relate the results to educational practice. Carroll

(1968) specified such a function for basic educational research when he

stressed the importance of establishing an adequate base for education

through basic research in "mathematics, computer science, genetics, physi-

ology, psychology, sociology, anthropology, and other relevant disciplines"

(p. 272). Such an approach can be represented as Position "A" in Figure 2.

Difficulties inherent in the deductive process, however, were stressed many

years ago by William James (1901), who cautioned:

> I say moreover that you make a great, a very great
> mistake, if you think that psychology, being the
> science of the mind's laws, is something from which
> you can deduce definite programmes and schemes and
> methods of instruction for immediate classroom use.
> Psychology is a science, and teaching is an art;
> and sciences never generate arts directly out of
> themselves. An intermediary inventive mind must
> make the application, by using its originality
> (pp. 7-8).

If basic educational research is envisioned exclusively as a deductive

process which has as its main purpose the incorporation of theories from

other fields into the field of education, it is faced with a difficult, if

not insurmountable, task. Conducting such research independently of the

practitioner would seem to add to the difficulties. The product may be

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inherently so incompatible to educational practice and the practitioner that no linkage system can adequately relate the one to the other.

2) Basic Educational Research as an Inductive Process

Some go a step further than James and describe basic research as primarily an inductive process. For example, Garfinkel (1967) has refused to given serious consideration to theoretical formulations "obtained outside actual settings within which such properties are recognized, used, produced, and talked about by settings' members (p. 33)." From such a point of view, basic research focuses on practical activities and commonplace circumstances as topics of empirical study. Position "B" in Figure 2 represents such an approach. Certainly there would seem to be some advantages if such a way of viewing research were utilized in educational research. For example, purely inductive, basic research in education might well provide findings which are closely related to the "organic needs" (Knowles, 1969) of the field. Further, as with action research, such an approach could involve positively both the researcher and the practitioner. But, at the same time, it would tend to share the limitations of action research since neither are designed to link back to previously developed theories in education or related fields.

3) Basic Educational Research as an Inductive-Deductive Process

A third approach focuses on the practical without excluding theories from related fields. Goodlad (1968) has indicated some of the central characteristics of such an approach as follows:

> Advancement of a field calls for productive inter-
> play between two modes of thought: the theoretical
> deductive and the empirical-inductive, often within
> the mind of one scientist (Conant). Second, educa-
> tional practices provide both the problems for
> educational inquiry and the "field" for testing and

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verifying conclusions (Dewey). Third, fluid in-
quiry reshapes a field, serving to monitor the
course of stable inquiry, pose alternatives, and
maintain the necessary tension of productive
uncertainty (Schwab). Fourth, inventing or
innovating in the practice of education involves
a blending of theoretical-deductive and empirical-
inductive inquiry. (p. 11)

Despite Conant's claim that a blending of the theoretical-deductive

and the empirical-inductive can take place in the mind of one scientist,

there would seem to be considerable advantage when the interplay is con-

ducted on a social basis. According the Campbell (1969):

The locus of scientific knowledge is social. Moving
the problem of knowledge from a solitary viewer's
vision to language is a step, but the implicit model
is still usually a single native speaker with perfect
knowledge of a stable language. Sufficient attention
is not yet given to the social and incomplete con-
ditions of language learning, to the fundamental
idiosyncracy and errorfulness of functional indivi-
dual lexicons, to the very partial distribution of
words that are still somehow "in" the language, to
the effective redundancy which makes imperfect
language as competent as it is. When these have been
assimilated, the locus of "truth" and "knowledge" will
have clearly shifted from individual "minds" to a
collective social product only imperfectly represented
in any one mind. (p. 331)

Even within disciplines, disciplinary competence is
not achieved in individual minds, but as a collective
achievement made possible by the overlap of narrow
specialties.... For an integrated and competent social
science, we need to invent alternative social organ-
izations which will permit the flourishing of narrow
interdisciplinary specialties. (p. 348).

It would seem, therefore, that advancement in the field of education

can most adequately be made possible, not by individual minds or by separate

research, development, and dissemination systems, but by a theoretical-

deductive and empirical-inductive interplay between researchers and practi-

tioners. Such a process is a type of symbolic interaction. From it, meanings

can be produced which are grounded in and emerge out of the interaction of

persons involved in different systems. Concerning symbolic interaction in

general, Blumer (1969) has observed:

> Symbolic interactionism does not regard meaning as
> emanating from the intrinsic makeup of the thing
> that has meaning, nor does it see meaning as arising
> through a coalescence of psychological elements in
> the person. Instead, it sees meaning as arising in
> the process of interaction between people....
>
> (Meanings are seen)...as social products, as cre-
> ations that are formed in and through the defining
> activities of people as they interact (p. 4).

Such an interpretation of the way in which meanings are generated was

used by the writer of this paper to design a social process which would

facilitate symbolic interaction between basic researchers and practitioners

in education.

In such a process, meanings concerning a lack of understanding of some

given set of phenomena in education, which is of primary concern to a basic

educational researcher, can be "grounded" by the contribution of the inter-

action with the practitioner. At the same time, practical goals of parti-

cular concern to an educational practitioner can be "grounded" in the

educational theories and even theories from related disciplines through inter-

actions with the researcher. Of more importance, both conclusion and

decision orie ted hypotheses can be generated concurrently through the inter-

action of the researcher and the practitioner. Bergin and Strupp (1970) have

strongly urged a similar type of collaboration between researchers and

prac.   ioners in the field of psychotherapy.

> We need improved communication between clinicians and
> researchers, and between researchers of divergent
> theoretical orientations. Scriven (1964) is correct
> in asserting that progress in psychology is hampered
> not by a lack of knowledge but rather by a surfeit
> of common sense knowledge shared by all individuals.
> The therapist, above all, is an expert in decoding

scrambled human communications which the patient
continually sends to himself and others. This
fund of knowledge is impressive, but it is largely
ignored by researchers and others who restrict
their focus to observed behavior.... The point is
that clinicians and therapists build as yet in-
sufficiently on each other's work, and because of
theoretical or termperamental blinders they reject
data which colleagues in other camps have to offer
.... A wedding of clinical observation and research
operations has yet to occur. From everything that
has been said, it follows that significant incre-
ments in knowledge, at least within the therapeutic
framework, are likely to come from the intensive
study of individual cases in which disciplined
observation is complemented by, and takes account of,
the complex interaction of variables, a task which
cannot be accomplished by statistical manipulations,
although certain statistical techniques may be
helpful in other respects. (p. 23)

Such a relationship between researchers and practitioners, whether
it is in education, psychotherapy, or in some other field, can be portrayed
through the utilization of what Campbell (1969) has called a "Fish-scale"
model (see Figure 3). While researchers and practitioners would seem, of
necessity, to have a central place in such a model, it would seem that others
who have a role in the interaction which generates meanings in education can
be represented on different rows of scales in the model. These would in-
clude specialists in related disciplines, on the one hand; and on the other
hand, learners, paraprofessionals, and community representatives.
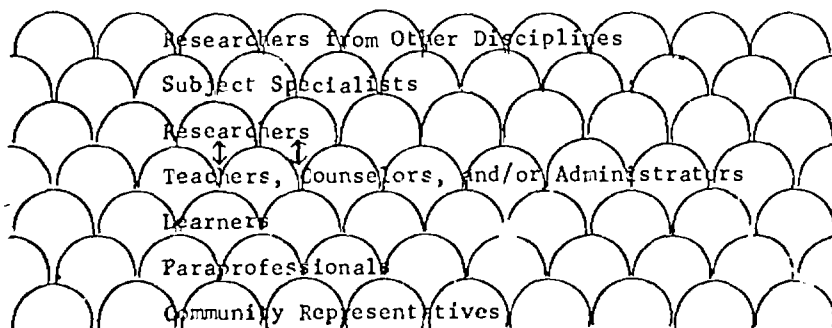

Figure 3. Educational Fish-scale Model. (Based on Campbell's
Fish-scale Model for Omniscience, 1969, (pp. 328-348)

In short, in this approach the problem of the current gap between educational research and practice is placed on the agenda to maximize researcher-practitioner interaction in order to yield more indigenous, educational hypotheses and theories.

While the primary focus of such inquiry is on educational practice, the symbolic interaction between the research   d the practitioner consists of theoretical-deductive and empirical-inductive interplay to allow inquiry which is indigenous to both conclusion and decision oriented inquiry concurrently. The resulting methodology can be referred to as "Indigenous, Interactional Research." Position "C" on Figure 4 represents such a process.
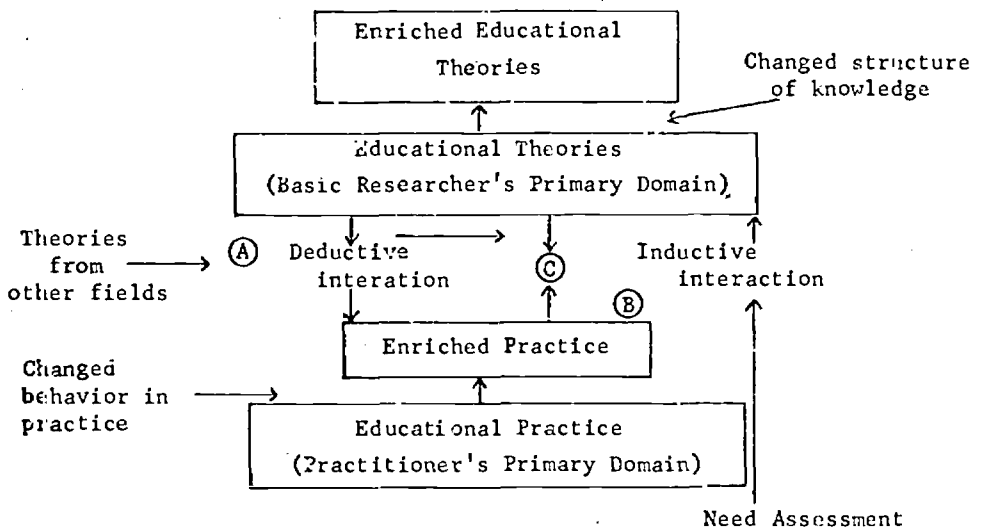
Figure 4. Relationship between Theory and Practice in Education

Field Testing the Indigenous, Interactional Research Methodology

Using such symbolic interactionist theory and methodology, a field
project was designed jointly by the writer, whose main concern was that of
basic educational research, and an educational practitioner, Mrs. Elsie
Withey, Coordinator, The Individual Study Laboratory, Central City Occupa-
tional Center, Los Angeles, California. The project was designed to: (a)
allow exploration and inspection (Blumer, 1969) of educational experiences,
and (b) maximize interaction between the researcher and the practitioner
in the analysis of the data.

Subjects for the study were selected through dimensional sampling
(Arnold, 1970) of adult learners at the Central City Occupational Center in
Los Angeles. Naturalistic data was obtained by videotaping small groups of
subjects while they were engaged in: (a) individualized programmed instruc-
tion; (b) classes which utilized group process; and (c) educational
experiences which combined aspects of both group instruction and individualized
programmed instruction.

In the inspection of the data on the videotapes, the researcher and
the practitioner used both theoretical-deduction and empirical-induction.
At first, there was considerable disagreement between them about the meaning
of the data viewed. But as concepts and theories drawn from both educational
practice and from other disciplines were considered and as each specified
what he saw and what data meant from his perspective, new meanings emerged
for both.

Before viewing the videotapes a second time, both the practitioner and
the researcher formulated intermediate hypotheses which became the focal
point for the reviewing of the videotapes. After the second examination of
the tapes, the practitioner and the researcher again interacted to

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reformulate the hypotheses. This process can be likened to "recycling" in "Strong Inference" (Platt, 1964). Repeated recycling, with interaction and reformulation of hypotheses taking place between each cycle, led to decision and conclusion oriented hypotheses which were seen by both as having been generated indigenously from the data through interaction.

Throughout the process, primary focus was not placed on trying to break down the complex phenomena viewed into simpler parts, but on attempting to put together a series of diverse observations into a unity of relationship (Madge, 1969). At each stage, the practitioner paid particular attention to consideration of ways to improve educational programs and procedures based on what was seen and experienced in the research process. The researcher was concerned principally with seeking to understand more fully: (1) the relationship between group process and individualized, programmed instruction; and (2) the nature of the interactional process in which he, as the researcher, and the practitioner were engaged.

The type of perspectives and hypotheses dealt with at various stages of the recycling process are illustrated below.

STAGE I

Preliminary Perspectives

1. The practitioner believed in the superiority of individualized, programmed instruction over group instruction.

2. The researcher believed, from a theoretical basis, that both individual and group instruction had valuable contributions to make to the learning process.

STAGE II

Intermediate Hypothesis

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"Persons in the individualized instructional setting

are actually interacting with each other in the learning

process."

Re-examination of the tape confirmed this hypothesis to the satisfaction of both the researcher and the practitioner. At various points in the tape it could be observed that learners had turned from their individualized instruction booths to neighboring learners to ask or answer questions about subject matter being studied.

STAGE III

Hypothesis

"Learners will be able to utilize the Learning Laboratory

more effectively if opportunities for individualized

programmed instruction are interspersed with group instruc-

tion and other opportunities for learner-learner interaction."

The researcher could then test this hypothesis by using a control group which had no opportunity for interaction. In turn, the practitioner could use the results of this research as the basis for modifying instruction offered in the Learning Laboratory.

As an additional outgrowth of this project, the practitioner has become involved in several educational innovations dealing with the inter-relationship between individualized and group learning. Also, as a result of this project, the researcher has begun research dealing with several hypotheses which emerged from the symbolic interaction between himself and the practitioner while viewing the research videotapes.

Implications

The primary advantages of Indigenous, Interactional Research would

seem to be the following:

1. Such research is capable of producing indigenous
   educational hypotheses generated through induc-
   tive and deductive interaction between researchers
   and practitioners in relation to naturalistic
   educational data.

2. Hypotheses generated by this process would seem
   to be particularly valuable in understanding,
   controlling, and predicting educational practice.

3. Hypotheses produced by this kind of research can
   be used by practitioners in program planning
   (Coladarci and Getzels, 1955).

4. Causal explanations can be inferred from analyzing
   the type of non-experimental data dealt with in
   this type of research through the use of path
   analysis (Wittrock, 1969).

Indigenous, Interactional Research, as described in this paper, cannot

be expected, of course, to completely close the gap between basic research

and educational practice. By supplementing other types of basic and applied

research, however, Indigenous, Interactional Research can provide a way to

minimize that gap.

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