PROGRAM EVALUATION ISSUES AND ANALYTIC TEACHING

INTRODUCTION

The evaluation of instructional programs designed to teach thinking skills has many important educational implications for school children, classroom teachers, school administrators and society as a whole. Many educators (e.g., Bloom, 1987; Presseisen, 1987; Nisbett, et al., 1987; Sternberg, 1985; Beyer, 1984) as well as several popular writers (e.g., Naisbitt, 1982; Toffler, 1980) suggest that, at the least, education must teach reasoning, critical analysis, and problem solving to the citizens of the 21st century. In fact, Costa (1987) goes so far as to propose that the ability to think is a prerequisite to the "basis" or the basic of the basics.

Leading proponents of the Philosopy for Children program (e.g., Lipman, 1985; Reed, 1986; Sharp, 1987) as well as some of our most influential educational philosophers (e.g., Dewey, 1966; James 1910) also advocate the teaching of analytic thinking or reasoning skills through dialogue within a community of inquiry. If these authors are correct and the thinking skills reform movement is crucial to the education of our children, then it behooves those committed to promoting the cognitive processing skills of reasoning, problem identification, problem solving, logical analysis, synthesis, evaluation of agreements, decision making, and others to become activist agents for change.

In order to act as peaceful change agents within the context of any social systems, and the current educational system is no exception, one has to first *understand* the decision-making process involved in the formation of policies and programs. Second, one must possess the needed *communication skills* in order to persuade those in authority of the value and merit of your proposed changes. In other words, to produce change in our educational system, we must know the *rules of evidence* that are currently employed to make decisions. Whether or not you like the rules or believe the rules should be changed, in order to bring about the desired reforms in educational practices, that is the promotion of the processes of inquiry and reason, you or someone on your behalf must act as a change agent.

Evaluation research is currently one of the principal *decision-making strategies* being employed by education policy makers at all levels. Although evaluation research is not the only means by which educational programs and curriculum are established and justified, it is probably the most important. It is the most important because of the claim that evaluation research is a rational enterprize employing objective and systematic methods. Carol Weiss (1975), a leading expert in program evaluation, states regarding evaluation research that "The assumption is that by providing 'the facts,' evaluation assists decision-makers to make wise choices among future courses of action. Careful and unbiased data on the consequences of programs should improve decision-making."

EVALUATION RESEARCH

The purpose of evaluation research according to Deming (1975) is to provide a *basis for action* in the future, with the *aim to improve* the product, or to help people to

live better, whatever be the definition of better. In an evaluation study, the goal is to try to learn something about the cause-system or process in order to be in a position to change it or leave it alone, whichever appears to be better for the future benefit of people or their pocket books. Issac & Michael (1981) propose that evaluation research is designed "to improve", while traditional research is designed "to prove". The idea of improvement suggests that a judgment must be made regarding what constitutes value or worth. Evaluation is a pronouncement concerning the effectiveness of some program that has been put into effect. Evaluation research is a study of causes or means-end analysis, thus analytic.

Evaluation research, though a rational endeavor, always takes place in a *social-political context.* The social-political settings of educational endeavors have established values and priorities, whether stated or unstated, that influence instructional programs. Weiss (1975) identified three major ways that political considerations intrude on evaluation. First, the policies and programs with which evaluations deals are the creatures of political decisions. Second, because evaluation is undertaken in order to feed into decision-making, its reports enter the political arena. Third, and perhaps least recognized, evaluation itself has a political stance. By its very nature, it makes implicit political statements about such issues as the success of some programs and the failure of others, the legitimacy of program goals, the validity of program methodology, the utility of reform strategies and even the appropriate role of people in the program.

Decision-makers at all levels of society are faced with limited resources, conflicting interest groups with differing values, and an overload of information that is often conflicting and difficult to process. These realities are forcing decision-makers to depend on decision-making strategies that are more "objective" and timely. In addition, several larger trends in society are making program evaluation research necessary according to Posavac and Carey (1980). The are the push toward managerial effectiveness, legislative demands, professional concerns, the consumer movement and competition for dwindling material and human resources.

Evaluation research, according to Issac and Michael (1981), is most often seen as related to decisions pertaining to 1) *accountability*, whether or not there is acceptable balance across expectations, accomplishments and cost benefits; and 2) *feedback*, shaping and refining or improving the program. However, the results of evaluation research are used by decision-makers for many different purposes. It is important that the specific purpose for initiating an evaluation study be made clear in advance. Conclusions pertaining to continuation of funding, public relations, legal requirements, cost effectiveness, and program planning are a few of the more important decisions that may be reached based on evaluation research.

The question most often asked is "Is the program successful in meeting its goals?" Weiss (1972) lists six *specific decisions* that can be made:

1) To continue or discontinue a program
2) To improve a program's practices and procedures
3) To add or drop specific program strategies and techniques
4) To institute similar programs elsewhere
5) To allocate resources among competing programs
6) To accept or reject a program approach or theory

Evaluation is probably not worth doing in four kinds of circumstances according to Weiss:

1) When there are no questions about the program. (If the decision has already been made.)
2) When the program has no clear orientation. (If the activities are mostly improvised or changing.)
3) When people cannot agree on the program goal(s). (If objectives are unclear or discrepancies exist.)
4) When there are not enough resources available. (If money, time, or people are not available.)

The role of any evaluator is to gather the most highly *credible evidence* or information possible within the constraints of the situation and to present conclusions based on the evidence in a form that makes them most useful to the decision-maker and other interested parties. The political aspects of most evaluations require that the evaluator know the audience(s) or "Who expects what?" Most evaluations will affect several different groups in addition to the primary decision-maker. School administrators, funding agencies, program developers, teachers, students, and evaluators are all possible audiences.

The primary audience to receive the evaluation information will greatly influence the goals and design of the evaluation. "What information is needed? Why is it needed? Who needs the information? How is the information going to be used?" are important questions an evaluator should answer before initiating an evaluation study of an instructional program. The conclusions reached will always be related by someone, if not by the evaluator directly, to the action(s) that must be taken with regards to the program being evaluated.

The questions that decision-makers or "inquiring minds" often ask are:

Does it work?
What are the program's goals?
What is the evidence (criterion)?
What kind of students does it target?
What type of teacher is needed?
How much teacher training is required?
What is the cost of training?
What are the immediate benefits?
What are the future benefits?
What impact will it have on the school?
Is this just another fad or quick fix?

Planning a program evaluation study may be integrated into instructional program planning from the beginning, be an after thought of the program designer or be a requirement imposed by a decision-maker. Regardless of the initiator of the study, evaluators must deal with two sets of goals, according to Moursund (1973). The goals are 1) the research goals, the goals of the evaluation process itself, and 2) the program goals, the goals of the program being evaluated. Even though these sets of goals may overlap, they are not identical and, in fact, they are often antagonistic.

It is generally agreed that instructional program evaluation has three fundamental *research goals.* These goals are to decide 1) whether the stated goals of a program are being achieved, 2) whether the program is operating as intended and, if not, why not, and 3) whether the program is positively or negatively affecting the overall

instructional environment. An evaluation study may attempt to address all of these goals. However, more often than not, a program evaluation study will concentrate on just one of these research goals. A distinction among evaluation studies based on the primary focus of the research generally has come to be referred to as:

1) *Summative Evaluation* - determine if program goals have been met. (Outcome or Effectiveness)
2) *Formative Evaluation* - determine if program has been implemented as planned. (Progress or Improvement)
3) *Impact Evaluation* - determine if program has affected the surrounding environment. (Context or Effect)

Program evaluation is probably most effective when evaluation planning is an integral part of program planning. However, this is the ideal case and much of instructional program evaluation is an afterthought designed to either justify the program already ongoing or to provide decision-makers with information regarding the program. Suchmann (1967) conceptualized the relationship between program planning and evaluation as follows:

Program Planning and Evaluation (Suchmann, 1967)

I. Value Formation

VI. Assessing Program (Outcomes) — *II. Goal Setting (Objectives)*

V. Implementing Program (Activities) — *III. Goal Measuring (Criteria)*

IV. Program Planning

Instructional programs designed to produce process outcomes such as critical or analytic thinking skills are often weakest in these areas: III. Goal Measuring, or specifying criteria, and VI. Program Assessment, or outcomes evaluation. The strengths of analytic teaching programs usually lie in these areas: 1. Value Formation, II. Goal Setting, and IV. Program Planning or Development. However, area V., Program Implementation, because of its dependency on effectiveness of teacher training and supportiveness of the educational environment is sometimes strong and sometimes weak. There is a critical need for developers and advocates of thinking skills programs such as the Philosophy for Children program to work more diligently with experienced evaluators to design more effective evaluations and to develop meaningful and useful criteria for measuring the outcomes of such programs. In fact, the future, or at least the persuasiveness of the impact of these programs, may depend a great deal on whether or not these two evaluation issues are adequately addressed in the near future.

Additionally, evaluation research is expected to provide decision-makers with *reliable* and *valid* information useful to their task of judging what programs to support. Bernstein (1975) suggests that program evaluation research starts with an existing program and endeavors to assess how it affects a set of only vaguely defined

goals. Thus, evaluators must ascertain from the decision-maker what are the "specific" goals of the research, what level of change in the goal measures are expected, what exactly is the program and what determines if the program is appropriately implemented. Deming (1975) specifies four requirements for an effective evaluation: 1) a meaningful operational measure of success or of failure, 2) some satisfactory research design, test, survey, or examination of data already gathered, 3) methods for presenting and interpreting the results of the study, and 4) some person or persons authorized to take action with or without evidence.

The validity of research on teaching was conceptualized by Campbell and Standley (1963) in their now classic article as involving two fundamental components:

1) *Internal Validity* - Did, in fact, the program make a difference? Was the program implemented in a way that permits the conclusion that only the program produced the effects measured, unconfounded by other extraneous variables? In other words, there is no alternative explanations or plausible rival hypotheses for the outcomes observed.
2) *External Validity* - To what population of students, teachers, schools, programs, and outcomes can the effects of the program be generalized? Can the results be interpreted to represent other versions of the program, other educational settings, or other measures of the effects?

Threats to valid causal and inductive inference as well as possible means for effectively addressing problems with research conducted in field settings such as instructional program evaluation in schools are discussed in detail by Campbell (1975) and Cook and Campbell (1979). Moreover, Alwin and Sullivan (1976) as well as Bernstein, Bohrnsetdt and Borgatta (1976) specifically discuss internal and external validity issues as they relate to evaluation research. Problems with internal validity may be classified into five broad categories:

1) *Student Selection* - characteristics or differences in students that exist prior to participating the program.
2) *External Events* - some occurrence other than the program that might affect the outcome measures.
3) *Program Component* - elements such as the teacher, time of day, or specific materials used produces effect, not the program itself.
4) *Measurement Error* - problems with the validity of the measure itself or problems with test administration.
5) *Student Dropout* - some students may leave programs for different reasons related to selection, the program itself or other uncontrolable events, such as moving out of town.

Problems with external validity may be classified into five broad categories:

1) *Student Selection* - characteristics of students participating are biased, unrepresentative or unknown.
2) *Measurement Effects* - problems with measures of outcomes in terms of unreliability, invalidity or interaction with other variables.
3) *Confounded Program Effects* - students participate in several educational activities at the same time, developmental changes in students and specific student traits may interact with programs.

4) *Situational Effects* - the particular characteristics of the school, classroom or teacher as well as novelty, attention or social context may affect outcomes.
5) *Differential Mortality* - loss of students or program units that change the program outcomes.

The basic parameters of program evaluation research have been outlined by French, Kaufman and Burns (1979) as involving three levels of evaluations, three data types and four target areas.

DATA TYPE	TARGET AREAS
Explanatory	
Associative	*Society*
Descriptive	
	School
LEVELS	
Process (Input)	*Program*
Outcome (Objectives)	
Impact (Long Term)	*Person*

Two critical evaluation issues that must be addressed by programs designed to teach analytic thinking skills are: 1) how to *measure the outcomes* of cognitive processing training, and 2) how to demonstrate *transfer* of training. In other words, what evidence can be presented to indicate that these reasoning skills programs have the effects purported by developers and advocates of these programs. Whimbey (1985) suggests that recent research tends to indicate that when thinking skills become an integral part of the curriculum and instructional practice, test scores in traditional academic areas increase. However, Winocur (1985) concludes that traditional assessment techniques are inadequate because performance on a test is overt, while thinking is a covert process and thus not directly observable and measureable in our traditional behavioristic ways.

Sternberg and Bhana (1986), reviewing the research on five leading thinking skills programs including Lipman's Philosophy for Children curriculum, conclude that more rigorous evaluation research is needed and that more attention be given to outcome measures, transfer, and durability of training. Bransford, Sherwood, and Vye (1986) indicate that thinking abilities are not just add-ons to domain-specific knowledge, but that reasoning skills and competencies in a domain develop together. Evaluators attempting to avoid measurement problems would profit from becoming familiar with sources of invalidity of measures (see Chapter 3 of Webb, Campbell,

Schwartz, Sechrest, and Grove, 1981; Chapters 6, 9, and 10 of Struening and Guttentag, 1975). The issues of outcome measures and transfer are critical to the future of thinking skills educational movement in general and the Philosophy for Children program in particular.

Additionally, thinking skills program advocates need to become more familiar with the decision-making process and the role evaluation research is playing in that process. As was suggested earlier, political realities and pressure for accountability is compelling administrators to rely on more objective means of program assessment in order to justify the allocation of human and fiscal resources to particular educational programs. Many different evaluation models (see Issac and Michael, 1981) have been suggested as frameworks for assessing program effectiveness. The process of instructional program development, implementation, evaluation, and integration is a complex process (i.e., Tuckman, 1985). Program acceptance is influenced by 1) social-political forces involving both community, organizational, and individual personality elements; 2) real or perceived needs; 3) similar or related programs already in existance; 4) current or projected resources, both human and economic; and, 5) evidence of past program effectiveness.

Program evaluation reports have many forms depending on whether the evidence from evaluation studies is to be presented formally or informally. Becoming familiar with the typical evaluation report format is another way that program developers, teachers, and administrators of thinking skills programs might better participate in the decision-making process.

Morris and Fitz-Gibbon (1978) in a brief yet highly informative book present useful information regarding how to effectively present an evaluation report or presentation. The outline below summarizes the basic elements of the evaluation report they present:

Evaluation Report Outline

I. SUMMARY - Purpose, conclusions, and recommendations

II. BACKGROUND
- *A. Origin*
- *B. Goals*
- *C. Participants*
- *D. Activities and Materials*
- *E. Administrative Arrangements*
- *F. Staff and Personnel*

III. DESCRIBE EVALUATION STUDY
- *A. Purpose - Summative, Formative, or Both*
- *B. Design and Time Frame*
- *C. Outcomes Measures and Collection Procedures*
- *D. Implementation Measures and Collection Procedures*

IV. RESULTS
- *A. Outcomes Measures*
- *B. Implementation Measures*
- *C. Informal Results*
- *D. Secondary Effects*

V. DISCUSSION
- *A. Alternative Explanations*
- *B. Significance of Results - Comparisons*
- *C. Conclusions and Recommendations*

VI. COSTS AND BENEFITS
- *A. Methods of Calculating Cost and Benefits*
- *B. Costs - Dollars and Human and Material Resources*
- *C. Benefits - Dollars, Mission, Program, and People*

VII. CONCLUSIONS AND RECOMMENDATIONS
- *A. Conclusions*
- *B. Recommendations*
- *C. Future Evaluations*

If thinking skills programs in general and the Philosophy for Children program in particular are going to have a significant impact on educational practice and teaching, advocators of these programs must become *effective change agents.* Several models of educational change have been previously proposed (see Glaser, 1983; Roger, 1976; Siber, 1974). The consensus among the different approaches to change is that innovation is a multi-staged process. Berman and McLaughlin (1977) suggest three stages of innovation: 1) support - recognition of need and search for program, 2) implementation - change process as innovation impinges on the institution, and 3) incorporation - routinization of the innovation into the system.

Roger (1976) identifies three factors that facilitate change or innovation. They are 1) identification of a change agent, usually an intermediary between the program developers and potential adopters; 2) a comprehensive program description that attends to the need for adaptability to the particular circumstances of each new location (This flexibility allows the adopter to have a sense of ownership, thus increasing commitment to its goals.); and 3) an extensive support system in the form of materials and services, including clearly defined goals and objectives and their relationship to materials as well as opportunities to observe ongoing programs.

Davis (1971) developed the following checklist pertaining to the factors related to the acceptance of change. The "A VICTORY" checklist was designed to help change agents anticipate the questions of decision-makers.

Factors Affecting Change
"A VICTORY"

Ability - *Resources - People and Money, Start-up and Maintenance*

Values - *Need Recognized Fits Philosophy*

I - *Information Available*
Decision Maker
Support

Circumstances - *Integration Possible*
New Program and Transition

Timing - *Maximize Success*
Easy Implementation

Obligation - *Commitment to Program*
Supports Change

Resistance - *Who? Teachers, Parents, Principal*
What kind? How much? When?

Yields - *Results and Outcomes*
Impact Short and Long Term

Mann (1979), presenting a historical perspective on concepts and training of cognitive processes, cautions against training "processes" instead of people. He also advises educator-advocates and program developers against excessive interpretation of flimsy research results and unwarranted extrapolations that foster an air of scientism when, in reality, they are arguments that rest on metaphorical or metaphysical grounds, rather than on concrete substantive data. Mann ends his review by concluding that the urgent need is for us to train or remediate students in those skills required for productive living in and outside of the school and, when possible, to impart knowledge and wisdom to them that will make their lives more than mere pursuit of reinforcement.

The goals of the Philosophy for Children program seem to exemplify the very educational outcomes called for by the futurists, philosophers, educators, and the informed public. Sharp (1987) expressed the goals as follows:

> *"To stimulate children to think well, to improve their cognitive skills so that they can reason well, and to engage them in a disciplined dialogue with one another so that they can reason well together, to challenge them to think about important ethical and social concepts drawn from the philosophical tradition, and yet to develop their ability to think for themselves so that they may think autonomously when actually confronted with moral problems." (p. 4)*

The importance of this view of education to children and the future requires that advocates and supports become active agents for change within the educational system. Developing an understanding of the decision-making process, program evaluation research and measure issues are imperatives for the advancement of the thinking skills educational reform movement.

CONCLUSION

Many thoughtful people believe that the future of our civilized way of life and even the world depends upon reasonable people engaging in dialogue together in a spirit of community in order to effectively adapt to the challenges of change. Moreover, reasoning and communication abilities also are assumed to be equally important for the life of the individual. If these assertions are correct, then it is incumbent on those committed to the thinking skills reform movement in education to become more effective educational change agents. In order to function effectively, advocates must become more acquainted with educational decision-making processes in general and evaluation-evidence processes in particular.

Program evaluation research has become an important means for justifying decisions regarding instruction and curriculum as well as for establishing accountability. Despite being a reasonable objective process, evaluation studies more often than not exist in a social-political context. The results of instructional evaluation have important consequences to program acceptance and funding. Therefore, advocates of the Philosophy for Children program and other thinking skills programs must become more informed with regards to program evaluation research and measurement issues as they relate to providing evidence to administrators and other educational decision-makers such as school boards and governmental agencies.

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