DOCUMENT RESUME

ED 081 770 SP 006 923

AUTHOR Ware, William B.; And Others
TITLE The Role of Behavioral Objectives in Accountability.
PUB DATE [72]
NOTE 22p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Behavioral Objectives; *Behavior Change; *Educational Accountability; *Educational Objectives; Educational Philosophy; *Evaluation Criteria

ABSTRACT

The thesis of this paper is that the ideas expounded in the booklet "Educational Accountability", by Arthur W. Combs, do little to clarify the issues and that a very limited and biased delineation of educational accountability and its behavioral objectives has been presented. It seeks to clarify the situation by examining the ideas of Combs in light of what already has been published in the literature. A synopsis of the booklet's arguments against behavioral objectives and its proposed alternatives is discussed with respect to other literature, followed by an evaluation of the alternatives proposed by Combs. (JB)

The Role of Behavioral Objectives in Accountability[1]

William B. Ware
John H. Newell
R. Emile Jester

University of Florida

Introduction

There is much confusion over the appropriateness of using behavioral objectives in systems of accountability and over the manner in which they should be written. Popham (1972a) has stated that much of the furor has subsided, although he pointed to some critics as self-appointed "Defenders of the Faith" who continue to see instructional objectives as part of a plot to destroy education. Thus while the matter of instructional objectives is seen as less controversial than in the past, there still exists a certain amount of debate.

Position papers expressing diametrically opposite conclusions continue to be published as evidenced by Gagne (1972) arguing for the use of behavioral objectives and Kneller (1972) arguing against such use. Position papers are not the only current literature relevant to the behavioral objective movement. While the leaders in the field of education continue to engage in philosophical arguments, other writers have been producing technical materials designed to assist teachers in the preparation of instructional objectives. Lindvall (1972) selected

[1]The authors wish to acknowledge the helpful criticism of their colleagues who reacted to an earlier version of this paper.

for review a sample of six such publications copyrighted in 1970. Other writers have offered critical analyses of issues surrounding the use of behavioral objectives. Smith(1972) suggested that the content of the objective (product vs. process) and the manner in which it is stated (precise vs. vague) may be a function of the specific situation being considered. A recent booklet (Combs, 1972) appears to continue this debate over behavioral objectives. The purpose of the present paper is to react to the arguments presented in the booklet.

The ideas expounded in "Educational Accountability" do little to clarify the issues. From one point of view, a very limited and biased delineation of educational accountability and behavioral objectives has been presented. The present paper seeks to clarify the situation by examining Combs' ideas in light of what has already been published in the literature. In order to accomplish this purpose, a synopsis of the points made in the booklet is presented; first, of the arguments against behavioral objectives, and second, of the proposed alternatives. Each of the arguments against behavioral objectives will be discussed with respect to other literature. This discussion will be followed by an evaluation of the alternatives proposed by Combs. In concluding this paper, general criticisms of "Educational Accountability" are made and at attempt is made to outline a more productive approach to the topic of behavioral objectives as related to educational accountability.

Against Behavioral Objectives

Six major points were identified in "Educational Accountability"

which seemed concerned with the limitations and inadequacies of a behavioral objectives approach:

1. Behavioral objectives are of limited use and must be confined to the acquisition of precisely defined skills.
2. Behavioral objectives represent a symptomatic approach to changing behavior.
3. Behavioral objectives stifle the creativity of the classroom teacher.
4. Behavioral objectives cause the teacher to lose sight of the general goals of education.
5. Behavioral objectives are undemocratic.
6. Behavioral objectives demoralize teachers.

Although almost no references to the work of scholars who also have had concerns about behavioral objectives were cited in "Educational Accountability", appropriate references from the literature will be used in reacting to the six arguments summarized above.

"Educational Accountability" begins by tracing the origins of behavioral objectives to the work of Pavlov, and B. F. Skinner's Beyond Freedom and Dignity is cited as a current manifestation of the principles of behaviorism. With respect to the tracing of the origins of behavioral objectives to S-R psychology, Ojemann (1969) has discussed this generalization, stating that the procedure of observing behavior to infer a change in learning in no way implies that the behavior is an invariable S-R arc.

The first major argument directed against behavioral objectives is that their use has "...limited value and often works quite effectively when applied to the acquisition of precisely defined skills" (pg. 1).

It was further stated that the use of behavioral objectives has not met with success when applied to subjects more complex than reading, writing, and arithmetic (pg. 6). Arguments both for and against the limiting of behavioral objectives to use with precisely defined skills have already been presented in the literature. Eisner (1969) has written that the users of behavioral objectives have failed to realize that such objectives are not possible for all areas of study. Ojemann (1969) has taken issue with this point, stating that the rationale of behavioral objectives stems from a press for operational definitions, that such definitions are necessary for clarity of communication, and that the argument by Eisner is not against the rationale of behavioral objectives but against practices employed. Popham (1968) has characterized the "limited use" argument against behavioral objectives as stemming from a very uninformed notion of the process of educational measurement and evaluation. Popham suggested that teachers of more complex subjects have criteria by which they evaluate student work, and that part of the problem seems to result from a reluctance to make public these criteria.

Of particular interest with respect to the "limited use" argument is a study reported by Ivey, Rollin, Cooper, Schleiderer, and Gluckstern (1970). A behavioral objectives approach to training preservice teachers in human relations skills was evaluated. Starting with a definition of existential intentionality (May, 1969), a module-based curriculum was developed and evaluated using behavioral objectives. While the statistical analysis was inappropriate, a reanalysis of the data confirmed most of the results. In essence, a behavioral approach

to humanism seemed quite promising. In a comprehensive bibliography of materials related to behavioral objectives, which included 962 titles, Poulliotte and Peters (1971) listed 20 references related specifically to the performing arts. These references would suggest that there is some effort by persons engaged in subject matter areas characterized by a high degree of creativity and individualized behavior to deal with behavioral objectives. On the basis of the literature cited, particularly the findings reported by Ivey et al. (1970) and the bibliography compiled by Poulliotte and Peters (1971), Combs' conclusion that behavioral objectives are not appropriate for the "more complex functions" (pg. 6) seems somewhat premature, if not inaccurate.

A second argument presented against behavioral objectives is that they cause teachers to focus their attention on the behavior of children, thus causing them to look in the wrong places to bring about important changes. Combs argued that the behavioral objectives approach is merely a symptomatic approach to behavior change. Such an approach fails to take into account that behavior is caused by the perceptual field of the person. Thus, a better way to change behavior would be to change the perceptual organization of the person (pg. 8).

This argument describing the behavioral objectives approach as a symptomatic approach which does not deal with the causes of behavior may be original with Combs. However, in the general psychological literature, proponents of psychoanalysis have long faulted "behaviorism" for its superficial approach. Suffice it to say that given the complexity of human behavior, most modern-day behavioral scientists have

given up the quest for causal relationships and now search for functional relationships among variables (Russell, 1917; Toulmin, 1953; Travers, 1969). Kibler, Barker, and Miles (1970) have taken the position that scientists are much more interested in characteristics of behavior which permit inferring the type of mental activity which produced it, than they are in the mental activity which preceded the observable behavior (pg. 32). Furthermore, the argument presented in "Educational Accountability" is difficult to follow and at times approaches the illogical. For example, it is stated that the relationship between perception and behavior is not one-to-one (pg. 18). A given perception may be manifested in several different behaviors. Similarly, a given behavior may be produced by a variety of perceptions. These premises are used to conclude that a change in perception must necessarily result in a change in behavior (pg. 19). This argument may be best characterized as a non sequitur.

The third argument presented in "Educational Accountability" is perhaps the one most commonly raised in arguing against the behavioral objective approach. It was stated that the teacher is required to state beforehand, in precise behavioral terms, the performance that is expected after instruction. This closed system of thinking, where ends must be specified in advance, stifles the creativity of the classroom teacher. Under such a system, the teacher is unable to capitalize upon unexpected opportunities which present themselves (pg. 8).

Combs is not the only educator to reject the notion of specifying the outcomes of instruction in advance. Other writers (Eisner, 1967;

Hoetker, 1969; Kibler et al., 1970) have taken the position that all the objectives of a teaching episode cannot be prespecified. Ojemann (1969) admitted the truth of this position, but maintained that the position was irrelevant as an argument against behavioral objectives. Ojemann has viewed the main purpose of behavioral objectives as making objectives clear so that they may be communicated effectively. Popham (1968) has taken a stronger position on this issue, maintaining that prespecification of objectives in no way hinders the creativity of the classroom teacher. Popham has viewed the classroom teachers' behavior as a means to an end. Within this context, the use of behavioral objectives may help keep the teacher directed toward the attainment of worthwhile outcomes. Kibler et al. (1970) have stated that one reason that teachers do not want to prespecify objectives is that they may be teaching a new course. Those authors have made recommendations for teachers who must prespecify objectives for units they have not taught before.

The fourth major point against behavioral objectives is an extension of the third argument which has just been discussed. Combs has claimed that the specificity of behavioral objectives tends to narrow the purpose of teaching because such specificity makes one lose sight of the general goals of education. The call for specificity in behavioral objectives distorts the entire educational system, as minor goals which can be measured take precedence over major goals of education in the classroom (pg. 9). Associated with this problem is the tendency that behavioral objectives are stated only for those behaviors for which precise measures already exist.

This objection has been raised in the literature (Eisner, 1967, 1969; Ojemann, 1969). In dealing with this criticism, it may be helpful to maintain a distinction between "specifying" in advance, and "specificity." Even so, Vargas (1972) has maintained that specificity is not synonymous with triviality. Responding to the criticism that behavioral objectives encourage trivial outcomes in education, Popham (1968, 1969) maintained that the use of behavioral objectives makes it possible for teachers to identify trivial outcomes and eliminate them. Hoetker (1969), a self-described humanist, stated quite clearly that educational practice might be improved if educators were to begin to think in terms of changes in human behavior. Lawrence (1971) has presented a case for thinking of behavior in open-ended terms, where the desired outcome might well be the mastery of an ongoing, dynamic process. Popham (1972b) has noted that some of education's goals are not evidenced until adulthood. These goals are non-trivial, but not subject to immediate evaluation. Nevertheless, many non-trivial outcomes can be stated behaviorally and should be.

The fifth argument is that the use of behavioral objectives is undemocratic. The behavioral objective approach is seen as opening the door for someone to move in and decide what objectives are appropriate for students. Students may see no personal meaning in the objectives selected, and thus, have no personal commitment to achieving the selected objectives. Consequently, education is seen by the students as being irrelevant to their needs (pg. 8).

This fifth argument is best regarded as two considerations; the

matters of personal meaning and democracy seem intertwined. Other authors previously have treated the matter of personal meaning in relation to behavioral objectives (Ojemann, 1968, 1969; Kibler et al., 1970). The position that behavioral objectives are undemocratic has also been presented. Popham (1968) has suggested that instruction is, by its very nature, undemocratic as society decides what the pupils shall learn. Further support for this position is given by Komisar and McClellan (1965), who imply that teachers have goals for students, and these goals are promoted rather efficiently.

The literature cited above seems to support the notion that the use of behavioral objectives is undemocratic. However, a more careful examination of the manner in which the word "democracy" has been used in this argument indicates that "democracy" has been defined as a laissez-faire type of situation. However, if one adopts a broader definition of "democracy", specifying a democracy as a system built upon "... a large variety of shared undertakings and experiences" (Dewey, 1961, pg. 84), then the notion of behavioral objectives is not inconsistent with the idea of a democratic institution. Thus, the validity of this fifth argument would seem to depend upon the definition of "democracy" employed.

The final argument against behavioral objectives presented in "Educational Accountability" is that the use of behavioral objectives demoralizes teachers. The press for behavioral objectives further complicates the teacher's role, as there are so many specific objectives which need attention. Teachers really do not need this added pressure;

what they need is more time to work with the children (pg. 11).

Many writers have treated the problem of the number of objectives necessary (Eisner, 1967, 1969; Kneller, 1972; Vargas, 1972). Eisner (1969) estimated that an average elementary teacher would need to attend to approximately 4000 objectives annually. On the other hand, Vargas (1972) has estimated that the objectives for a two-week unit in mathematics would take only one-half a page. If one were to follow the suggestions made by Hoetker (1969) for avoiding objectives defined too narrowly, the number of objectives could be reduced significantly.

The six major points discussed above were used to "prove" the dehumanizing effects that behavioral objectives have upon the process of education. After presenting this "evidence", Combs attempted to remove all doubt by pointing out that the current amount of information would preclude the possibility of a common curriculum. As though in anticipation of this argument, Kibler et al. (1970) have suggested that a basic set of objectives be developed which all students should achieve. Beyond that, there exists the possibility that objectives be individualized, permitting the students to select activities, which might do much to improve the personal meaning of the learning experience. It was further argued that the complexity of our society and the rapidity of change make it impossible to specify what behaviors will be appropriate when the pupils are adults. This point may very well be true if behaviors are regarded as precisely defined categories of knowledge. However, if one takes a more general definition of behavior, including such activities as the processing of information, then it is possible to

develop behavioral objectives which will prepare the pupils for a variety of situations (Ivey et al., 1970; Hoetker, 1969). These objectives may deal with both cognitive and affective processes.

In the same line of thought, Gagne (1971) proposed that there are five major categories representing what is learned. These are "motor skills, verbal information, intellectual skills, cognitive strategies, and attitudes." These categories are certainly broad enough to include the skills necessary in a complex and rapidly changing society. By preparing objectives of instruction encompassing these five areas, the educator could indeed cover the areas characterized as too broad in "Educational Accountability", and could then be held accountable for measurable outcome clearly specified.

In a global reaction to Combs' position, one must admit that some interesting points regarding behavioral objectives have been raised. However, one cannot help but note the lack of reference to any previous discussion of these issues. "Educational Accountability" is not addressed to the real issue, the legitimacy of using behavioral objectives in systems of accountability, and the position expressed in the booklet appears to be in opposition to the sparse empirical evidence. Indeed, a self-declared humanist, Hoetker (1969) has characterized most humanist attacks on behaviorists as "...rousing and witty and satisfying, but they are too often snobbish and self-serving, too often empirically ungrounded, too often attacks on 'science' rather than arguments to the issues."

Proposed Alternatives

Since Combs interpreted the "behavioristic" position on

accountability to be lacking, he then attempted to offer alternative courses of action. It was stated, "There are other approaches to accountability on which we can rely for further evidence of educational outcomes" (pg. 12). The first alternative identified was the recognition that one must concentrate on the causes of behavior rather than upon the behavior itself. From this point of view, behavior is seen as the symptom of some internal state. Since the other approaches to accountability were not identified, these authors have inferred that treating learning as the process of discovering personal meaning is a second approach to accountability. Attempts to locate other approaches in the booklet were not successful.

While only one alternative was clearly identified in "Educational Accountability", several recurring themes seem to appear in the paper. The first theme is "personal meaning." It was stated that personal meanings must be made "the primary objective of education" (pg. 21). Combs has argued that there are two major aspects of learning: the acquisition of new knowledge, and the personal discovery by the learner of the personal meaning of that information or knowledge. Combs appears to believe that the personal meaning aspect is the more important. Another theme running through the booklet is "human judgment." Combs argued that accountability experts regard human judgment with "suspicion and disdain" (pg. 14). In reacting to this perceived "suspicion and disdain," Combs posited that the assessment of most human behavior involves human judgment and to eliminate it as an important aspect of accountability is not justified. The third theme in "Educational Accountability" may be described as "intelligent" and "responsible"

behavior. Combs described intelligent behavior as "...effective, efficient problem-solving action (behavior) contributing to the fulfillment of an individual's own and society's needs" (pg. 11).

It is extremely difficult to react to these themes because it appears that their meaning is contained almost totally within the personal meaning held by Combs. It was hoped that somewhere in the paper, operational definitions of these terms would be offered, but such definitions were conspicuously absent. Thus, Combs seems to have relied upon private definitions to communicate his personal meaning. Had an attempt been made to employ more public definitions of "personal meaning", "human judgment", and "intelligent behavior", less time could have been devoted to the discussion of these themes, and the paper could have moved more quickly to the discussion of those areas for which teachers should be held accountable.

Just prior to concluding the paper, Combs has recognized five areas for which "teachers can and should be held accountable" (pg. 35). The first of these areas relates to subject matter. It was stated that teachers can be held accountable for being informed in subject matter. As was pointed out, "This is so self evident as to need no further discussion" (pg. 36). These authors would like to second the belief that teachers ought to be accountable for knowledge of subject matter, but cannot agree that this is self evident. How much subject matter, what kinds of subject matter, and the relationship of subject matter to the educational goals of the teacher in the classroom have been topics of discussion and research for a number of years and do not yet seem

self evident. The relationship of subject matter competency to the concern with personal meaning by the teacher is an area that is relatively unexplored and is one that Combs might wish to study.

The second area specified was that teachers can be "held responsible for being concerned about the welfare of students and knowledgeable about their behavior" (pg. 36). It is not clear if Combs meant that teachers should acquire skills and knowledge about human behavior and its assessment. If Combs is referring to knowledge of human behavior and a demonstration of this knowledge, techniques are available to assess this behavior in an objective manner. The third area of accountability offered in "Educational Accountability" deals with an understanding of human behavior and seems to parallel very closely the second area which has just been presented.

The fourth area offered in the booklet was the belief that teachers can be held accountable for the purposes they seek to carry out in the classroom (pg. 37). Students of accountability recognize that "educational goals" are most often not stated in behavioral terms, but they can be related directly to behaviorally stated outcomes. There seems to be little argument that teachers need to be held accountable for the purposes they seek to carry out in the classroom when considering the stated objectives found in most school systems. Although there is no direct evidence in the description of this area of accountability that Combs meant much more than typically stated educational goals, in other sections of the paper it was suggested that the discovery of personal meaning and the development of human judgment are critical

goals of education. If these goals are to be included in the purposes teachers seek through their classroom behavior, then Combs has gone beyond what is included by most school systems in statements of educational goals. While such additions may be extremely appropriate, no assessment techniques were suggested in "Educational Accountability."

The final area of accountability identified in the booklet dealt with the methods used in carrying out the purposes of society as the purposes of the individual teacher (pg. 37). Combs suggested that these methods are in large part "highly personal." The argument was extended further to assert that generally accepted "right kinds of methods" do not exist. From this premise, one might conclude that the assessment of teacher behavior is possible only through the use of personal methods which remain undefined. As Vander Velde (1969) has pointed out, total reliance upon "personal meaning" is logically inconsistent with the notion of a consensual society (pg. 102). This inconsistency makes it difficult to identify the purposes of society from a perceptual point of view. This problem makes the relationship between the fifth point and accountability unclear.

Despite the lack of clarity, these authors find little disagreement with the areas of accountability outlined by Combs. Measures and procedures already exist to assess some of these areas, such as the subject matter competency of teachers and their knowledge of human growth and behavior. However, Combs then moved into the realm of private definitions, stating that much of that for which the teacher can be

held accountable is in the nature of personal judgment and meaning. The lack of suggestions for assessment, as well as the lack of definitions of terms, makes "Educational Accountability" difficult to interpret.

Conclusion

In conclusion, there are a number of major criticisms which seem warranted. First, the paper by Combs suffers from a shortage of relevant references. It is difficult to understand why Combs chose not to include citations to literature which supports the arguments against behavioral objectives in educational accountability. It should be noted that the references included in the present paper represent only a small sample of the literature which could have been cited on these matters. The most relevant reference cited by Combs is his reference to The Professional Education of Teachers: A Perceptual View of Teacher Preparation (Combs, 1965) in which the major points of his current paper have been discussed at greater length. The only citation to a behavioristic position on accountability is the latest book by Skinner(1971) which does not deal with the topic of accountability and, in our judgment, is not an appropriate reference for this area.

The second criticism deals with the presentation of the behavioristic position. Not only has Combs selected Skinner's latest book as representative, but he has provided only a limited and unrepresentative description of the behavioristic position. Work by other current behaviorists is not included and the position as presented by Combs, while useful as a "straw man" to attack, hardly does justice to a

reasonable and well documented approach to psychology. While placing the behaviorists in the position of being against inference permits a clear distinction between the behaviorist and humanist positions, such a statement does not coincide with the position taken by a number of modern behaviorists.

The third criticism of the paper by Combs relates to an apparent confusion about the differences between "accountability" and "behavioral objectives." Although the presentation was entitled "Educational Accountability," the body of the paper is focused almost entirely on behavioral objectives. One must assume that Combs views these two terms as equivalent. While behavioral objectives may be a part of a program for educational accountability, the latter term is typically used in a much broader sense than behavioral objectives. As a result of this confusion, a reader who is not acquainted with the literature on educational accountability may draw some inaccurate inferences from the presentation by Combs, regarding the relationship between the two terms.

A fourth criticism of "Educational Accountability" is that it appears to equate "measurable" with "narrow." Although there is no direct quotation to this effect, a reading of the paper makes it quite clear that anything measurable must necessarily be narrow, such as specific skills and facts. Sanders (1966) has provided an entire book for teachers on how to implement the various cognitive levels developed by Bloom, Englehart, Furst, Hill, and Krathwohl (1956) in their work on the cognitive domain. Sanders dealt with the higher cognitive

levels of interpretation, analysis, and synthesis and offered specific procedures for the measurement of these behaviors. To relegate things measurable to things specific and limited is inconsistent with the literature on educational accountability as well as with a rather extensive body of research.

The fifth criticism of "Educational Accountability" is of a more general nature. Several authorities would agree that one criterion of judging the contribution to science of any endeavor is the degree to which the work may be subjected to public scrutiny (Bridgman, 1927; Stevens, 1939; Marx, 1963). Measured against this criterion, "Educational Accountability" would not seem to warrant being considered as a scientific contribution to the understanding of human behavior. The booklet relies upon implicit definitions and upon constructs which defy public observation. This one problem may explain all four of the preceding general criticisms.

In closing, it is noted that a review of the rather extensive body of literature on educational accountability reveals little empirical research which has been completed. Combs has provided yet another paper which discusses educational accountability without the inclusion of any empirical evidence. "Educational Accountability" does not appear to contribute anything new to the topic of educational accountability as evidenced by references cited in this paper. Indeed, many of the "new" ideas are simply restatements of positions stated elsewhere (Combs, 1965).

Many claims and counterclaims about educational accountability

have been presented. Enough has been said about educational accountability which reflects a variety of philosophical or theoretical positions. The time has come to develop research proposals which are designed to provide clear empirical evidence to support or refute these claims. It is hoped that this paper may serve as a turning point, moving from rational argument toward inquiry firmly based upon empirical data.

In the way of a summary, the present authors can think of no better way to conclude this paper than by heartily endorsing two comments made in "Educational Accountability." "Whatever interferes with the optimum dynamics for learning, no matter how desirable it may appear in theoretical or logical terms, must be examined critically in the light of larger objectives" (pg. 16), and, "Many a wrong in human history has been carried out by men of good intentions without proper perspective" (pg. 39).

REFERENCES

Bloom, Benjamin S.; Englehart, Max D.; Furst, Edward J.; Hill, Walker H.; & Krathwohl, David R. Taxonomy of Educational Objectives: The Classification of Educational Goals -- Handbook I: Cognitive Domain. New York: David McKay Company, Inc., 1956.

Bridgman, P.W. The Logic of Modern Physics. New York: Macmillan, 1927.

Combs, Arthur W. The Professional Education of Teachers: A Perceptual View of Teacher Preparation. Boston: Allyn & Bacon, 1965.

Combs, Arthur W. Educational Accountability: Beyond Behavioral Objectives. Washington, D.C.: Association for Supervision and Curriculum Development, 1972.

Dewey, John. Democracy and Education: An Introduction to the Philosophy of Education. New York: The Macmillan Company, 1916.

Eisner, Elliot W. Educational Objectives: Help or Hindrance? The School Review, 1967, 75, 250-260.

Eisner, Elliot W. Instructional and Expressive Objectives: Their Forumlation and Use in Curriculum. In Popham, James; Eisner, Elliot; Sullivan, Howard; and Tyler, Louise. Instructional Objectives. American Educational Research Association Monograph Series on Curriculum Evaluation, No. 3. Chicago: Rand McNally & Company, 1969, pp. 1-18.

Gagne, Robert M. Domains of Learning. (Presidential Address delivered at the Annual Meeting of the American Educational Research Association. New York, 1971.)

Gagne, Robert M. Behavioral Objectives? Yes! Educational Leadership, 1972, 29, 394-396.

Hoetker, James. The Limitations and Advantages of Behavioral Objectives in the Arts and Humanities. (Speech given at the Annual Convention of the National Council of Teachers of English, Washington, D. C., 1969.)

Ivey, Allen E.; Rollin, Stephen A.; Cooper, James M.; Schleiderer, Alice; & Gluckstern, Norma. Human Interaction: A Behavioral Objectives Curriculum in Human Relations. Amherst, Massachusetts: School of Education, University of Massachusetts, 1970.

Kibler, Robert J.; Barker, Larry L.; & Milles, David T. Behavioral Objectives and Instruction. Boston: Allyn & Bacon, Inc., 1970.

Kneller, George A. Behavioral Objectives? No! Educational Leadership, 1972, 29, 397-400.

Komisar, P. B.; & McClellan, J. E. Professor Arnstine and Programmed Instruction. The Educational Forum. 1965, 29, 467-475.

Lawrence, Gordon. Can Behavioral Objectives Be Open-ended? (Paper presented at the Annual Meeting of the American Educational Research Association, New York, 1971).

Lindvall, C. Mauritz. A Review of Selected Publications on Behavioral Objectives. Journal of Educational Measurement, 1972, 9, 75-81.

Marx, Melvin H. The General Nature of Theory Construction. In Marx, M. H., Theories in Contemporary Psychology. New York: Macmillan, 1963, pp. 4-46.

May, Rollo, Love and Will. New York: Norton, 1969.

Ojemann, Ralph H. Should Educational Objectives be Stated in Behavioral Terms? The Elementary School Journal, 1968, 68, 223-231.

Ojemann, Ralph H. Should Educational Objectives be Stated in Behavioral Terms? Part II. The Elementary School Journal, 1969, 69, 229-235.

Popham, W. James. Probing the Validity of Arguments Against Behavioral Objectives. (Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, 1968.)

Popham, W. James. Objectives and Instruction. In Popham, James; Eisner, Elliot; Sullivan, Howard; & Tyler, Louise. Instructional Objectives. American Educational Research Association Monograph Series on Curriculum Evaluation, No. 3. Chicago: Rand McNally & Company, 1969, pp. 32-52.

Popham, W. James. Must ALL Objectives be Behavioral? Educational Leadership, 1972, 29, 605-612. (b)

Poulliotte, Carol A.; & Peters, Marjorie G. Behavioral Objectives: A Comprehensive Bibliography. Boston: Instructional Technology Information Center, Northeastern University, 1971.

Russell, B. Mysticism and Logic. London: G. Allen, 1917.

Sanders, Norris M. Classroom Questions: What Kinds? New York: Harper & Row, Publishers, 1966.

Skinner, B. F. Beyond Freedom & Dignity. New York: Alfred A. Knopf, Inc., 1971.

Smith, Phillip G. On the Logic of Behavioral Objectives. Phi Delta Kappan, 1972, 53, 429-431.

Stevens, S. S Psychology and the Science of Science. Psychological Bulletin, 1939, 36, 221-263.

Toulmin, S. The Philosophy of Science. London: Hutchinson, 1953.

Travers, Robert M. W. An Introduction to Educational Research. Third Edition. New York: The Macmillan Company, 1969.

Vander Velde, Phillip Bruce. A Philosophical Analysis of the Theoretical Assumptions of the Perceptual Psychology of Arthur Combs as it Relates to the Education of Teachers. Unpublished doctoral dissertation, Michigan State University, 1969.

Vargas, Julie S. Writing Worthwhile Behavioral Objectives. New York: Harper & Row, Publishers, 1972.