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ABSTRACT

Attempting to account for criticisms of earlier studies, a study investigated whether behavioral objectives improved student learning. Subjects, 43 undergraduate students enrolled in a business and professional communication course at a large mid-western university, were randomly divided into two groups. One group stayed in class and received objectives in written form and received verbal instruction on the use of behavioral objectives as a study guide. The actual instruction consisted of group discussions and a role-playing cooperative small group activity based on a textbook chapter on groups in organizations, as well as two testing sessions and a survey of student satisfaction with the learning process. Results indicated no significant difference between students who received and did not receive behavioral objectives, either in their achievement or satisfaction level. Although findings suggest that behavior objectives had no effect on student learning, rational arguments based on logic will continue to weigh in favor of their use. (Contains 15 references. Appendixes present the behavioral objectives, the chapter test, and the survey instrument.) (RS)

Do Behavioral Objectives Improve Student Learning?

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Abstract

This study attempts to add insight into the inconclusive results of previous studies on behavioral objectives. Two hypotheses concerning 1) the level of student academic achievement and 2) the level of student satisfaction are tested in this empirical study of fourty three undergraduate students at a large mid-western university. In both cases, the null hypotheses are not rejected. A discussion of the implications of the results follows.

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Do Behavioral Objectives Improve Student Learning?

In the past two decades, behavioral objectives have been brought to the limelight and have been sometimes even considered a ". . .panacea for our educational ills" (Weller, 1980, p.177). Despite the enthusiasts' claims of the utility of behavioral objectives, however, empirical research has failed to conclusively support the use of behavioral objectives in the instructional process. The inconclusive results may be partly due to inconsistencies of operational definitions of behavioral objectives, lack of skill on the part of the student in dealing with behavioral objectives, and lack of instructor training on their use (Kibler, Cegala, Barker & Miles, 1974; Kibler, Bassett & Byers, 1977). The purpose of this study, therefore, is to carry out an empirical study which takes these criticisms into account, while attempting to answer the question: Do behavioral objectives improve student learning?

REVIEW OF LITERATURE

The issue of the use of behavioral objectives in the instructional process has engendered heated discussions from advocates of both sides of the argument. The argument seems to stem from an ideological rift between behaviorists on the one side, and humanists, on the other (Jonassen, 1982). The behaviorists believe that behaviors are the only means to look inside the students' "black boxes," and therefore, that

evaluation of student performance based on terminal behavior indicated as behavioral objectives is justified. Humanists believe that behavioral objectives are trivial and stifling, and that they thwart incidental learning and, more importantly, the free will of students. This paper will first of all deal with theoretical studies on the issue of behavioral objectives, then review some relevant empirical studies.

Most theoretical studies acknowledged the fact that the issue of behavioral objectives was still an unresolved one. Some scholars approached the controversy by presenting the most pertinent arguments against the use of behavioral objectives, and refuting them, point by point (Gage & Berliner, 1984; Popham (1968) cited in Kibler et.al., 1974).

McAshan (1970) also presented both sides of the issue, by reviewing the major arguments both for and against the use of behavioral objectives. He concludes that despite the arguments against their use, that they are more helpful than they are harmful.

Jonassen (1982) contends that the use of objectives promotes three advantages - evaluation, selection of instructional activities and materials and feedback about the progress of the student as well as about the effectiveness of the instructor. Jonassen also replies to the humanists' critiques of behavioral objectives by adding two additional reasons justifying the use of behavioral objectives. His arguments are, first, that egalitarianism is promoted and that the hidden curriculum is eliminated with the use of behavioral objectives, and that

secondly, teacher understanding of the mental processes required to learn is clarified. One critique of this study is that Jonassen's arguments seem to infer that he is the initiator of the arguments, whereas it seems that he is simply rewording earlier arguments already made. For example, Clark (1972) mentions the egalitarian principle in related terms, all pointing to the democratization of the instructional process, through the use of behavioral objectives. He states that students will experience more freedom in, and direction on what he will be evaluated on, and that students will in the long run participate more, with the use of behavioral objectives (pp. 27-35).

Clark (1972) may be right when he justifies the raison d'etre of his book by saying that he doesn't want to publish just another "how to write objectives" manual when the problem really seems to lie in whether teachers know how to use them effectively in the teaching process. However, his presentation of the justification of using behavioral objectives was rather confusing in that he presented a list of justifications for their use, in the section of the book entitled "Why have behavioral objectives?" then presented another set of justifications in the section entitled "How do objectives differ from traditional methods?" His argument would have perhaps been less confusing if he had consolidated all the arguments together in one chapter, instead of dispersing them over a few.

Some studies seemed to accept the argument of the utility of behavioral objectives, with reservation. Weller (1980), asserts that "Assessment of student performance in mastering the basic

skills through the use of behavioral objectives and its corollary competency-based testing, used as an efficient and quantifiable assessment system, is a viable and salient strategy in providing accurate feedback," but that behavioral objectives should be used only with caution and a knowledge of their shortcomings (pp. 177-178). One interesting aspect that Weller cautions against is that behavioral objectives that are "canned" and "packaged" at commercial publishing houses for mass use may discourage the local development of learning criteria by teachers. According to him, this takes away a sense of local ownership and "personalization."

Ojeman (1968) also seems to acknowledge the utility of behavioral objectives with some reservation. In his article "Should educational objectives be stated in behavioral terms?", Ojeman answers in the affirmative, provided that:

1. Instructors realize the potential difference between overt behavior in classrooms and in situations where the student is relatively free to do as he/she wishes.
2. Both types of behavior are considered in teaching and evaluation.
3. Concern with overt behavior does not eclipse an equally important part of instruction: recognition by the student of the personal significance of the subject to him/herself.

Still other studies simply stated the various advantages of using behavioral objectives, such as lessening student frustration about what to learn, and how to demonstrate that the specified learning has been achieved, and feedback to teachers

about the effectiveness of instruction. All the advantages seemed to deal with a democratization of the educational process, making the instructional process freer of subjective evaluations and errors of judgement (Kibler et.al., 1974; Mager, 1975, Alberto and Troutman, 1986).

EMPIRICAL LITERATURE

Among empirical studies directly reviewed, most seemed to agree that behavioral objectives have "large effects on learning" (Rothkopf and Kaplan, 1972, p. 300). These studies looked at different independent factors such as the density and specificity of instructional objectives, passage length and part versus whole presentations of objectives and text upon learning (Kaplan, 1974; Kaplan and Rothkopf, 1974; Rothkopf and Kaplan, 1972). Two critiques, however, can be made of these studies. In all these studies, only rote level questions (fill in the blank) were generated for the test, and moreover, these questions were constructed by taking a sentence verbatim out of the text, removing one key substantive word, and substituting a line of uniform length (Rothkopf and Kaplan, p. 297). Another criticism is that there were no operational definitions of an instructional objective offered, nor any examples given of objectives used in these studies. These two criticisms pinpoint methodological flaws that may undermine the validity and reliability of these empirical studies.

Duell (1974) undertook a two-part empirical study of the utility of objectives in dealing with 1) higher level test questions and 2) areas not already predicted as important by students. This study had the merit of using the form of objectives prescribed by Mager (1962) and presented an example of the objectives Duell used in the study. In addition, it used test questions that dealt with differing levels of cognition. The results of this study showed that behavioral objectives do not necessarily help students achieve more on higher cognitive level tests, because Duell found that in general, if students could master the lower level test questions, then they could probably also do the higher level test questions on the same topic. So the implications of using behavioral objectives lay, not specifically in helping students with higher cognitive level test questions, but more in directing students to areas of importance, which they may later be tested on. In the second experiment, the findings showed that the students judgements of the importance of a specific topic determined whether behavioral objectives helped them in that area or not. In other words, in areas which the student had already predicted as important, behavioral objectives did not help, but they did help to direct student attention to areas students would not have expected to be important.

Finally, two comprehensive studies of empirical research on the use of behavioral objectives shed additional light on the controversy. Kibler et.al. (1974) in reviewing fifty empirical studies on using behavioral objectives concluded with mixed

results as to their effectiveness (p.6). The authors offer three possible reasons for their inconclusive finding:

1. Operational definitions of instructional objectives and examples of objectives used in the study were not presented.
2. Few students in the experiment received instruction on how to use instructional objectives.
3. Few teachers were provided training with behavioral objectives (p.7).

Another study carried out three years later examined over one hundred experimental studies (journal articles, convention papers, theses and dissertations) and also concluded that behavioral objectives have not consistently shown to have positive effects on student learning. They again, present potential reasons for these findings, including the reasons already presented in the study by Kibler et.al. (1974), and conclude that despite the inconclusive results, "Rational arguments based on logic, however, will continue to weigh in favor of their use . . ." (Kibler, Basset and Byers, 1977,p. 283).

INDEPENDENT/DEPENDENT VARIABLES

The proper use, or absence of behavioral objectives are the two independent variables in this study, and student achievement and satisfaction will be the two dependent factors studied. This was an experiment, as experiments refer to parts of research in which variables

are manipulated and their effects upon other variables observed (Camppbell and Stanley, 1963, p.1).

HYPOTHESES

The following two null hypotheses were tested in this study:

1. Students who are presented with behavioral objectives before instruction will not differ in their achievement from students without behavioral objectives.
2. Students who are presented with behavioral objectives before instruction will not differ in their satisfaction with the learning process from students without behavioral objectives.

EXPERIMENTAL DESIGN

This study follows an experimental design that is among those currently recommended in the methodological literature (Campbell and Stanley, 1963, p.13). This design takes the form:

R O1 X O2
R O3 O4

where R stands for randomized selection of subjects and O1 is compared against O2, O3 is compared against O4, after the occurrence of event X. Among the twelve factors jeopardizing the validity of experimental designs, this design controls for many factors such as testing, maturation, history, instrumentation,

regression, selection and maturity (Campbell and Stanley, 1963, pp.13-16).

The subjects of this study are forty three undergraduate students (n=43) enrolled in a large mid-Western university. The majority of students enrolled in the class were taking the business and professional communication course to fill a requirement in their curriculum. The instructional session dealt with a topic already included in the agenda of the course, but not yet covered. The session took two days near the end of the first semester.

PRE-TEST

A simple pilot test was conducted to pretest the reliability and validity of the evaluative instrument to be used to assess student achievement in the topic taught during the instructional session, namely the topic of small groups within the organizational context. Two graduate assistants who had had experience teaching the same business and professional communication course with the same text, were asked to answer the ten multiple choice questions while checking for content validity; i.e. verifying whether each question dealt with the content in the text, or not. Both instructors affirmed that all the questions dealt with material covered in the textbook. One assistant was asked to answer the same ten multiple choice questions a second time, after an interval of a few days, in order to check for internal reliability. Results showed that the

test was reliable when measured for test/retest , or internal reliability, as the assistant received exactly the same grade, 80%, as she did earlier when tested with the same questions.

To check again for validity, one graduate student in still another department in the same university was asked to take the test. It was assumed that he would not have prior knowledge of the material covered in the test, and when asked, he affirmed the fact that he had no prior knowledge. The results of this test showed that the student who had no prior experience with the reading material rated much lower on the multiple choice questions, than the two graduate students who did have access to the reading material, as was expected. His score was 50% on the multiple choice test, whereas the mean of the other two graduate students was 85%. This showed that the multiple choice questions seemed valid to the extent that those who had had access to the material rated significantly higher than the student who had not.

One reason for this student's relatively high score may be attributed to his graduate level standing. Since the student tested was a graduate student, and since the students the test was made up for are undergraduate level juniors for the most part, this could have accounted for his score being higher than 25% which is the expected score for someone with no prior knowledge of the material, when guessing at answers to multiple choice questions.

MASTERY CRITERION

In any event, students who read the material were assumed to be able to have more correct answers than anyone who had not had access to the reading material. Therefore the criterion for mastering the test was set tentatively above 50%. As the mean score of two graduate instructors who had taught the material covered in previous semesters was 85%, the mastery criterion was set at 65%, because these instructors were assumed to have superior knowledge and repeated access to the material, as compared to the undergraduate students in the experiment.

METHOD

Before instruction, at the end of the class meeting immediately prior to the instructional session, half of each of the two sessions of the communication class (n=21 and 22 respectively) were asked to leave approximately ten minutes before the end of the class period. The group asked to leave early received no objectives or verbal instructions on how to use objectives in learning, and thus constituted the control group for this experiment. The remaining ten students out of twenty one and twenty two students in each section , randomly selected, were asked to stay in class and received behavioral objectives in written form, and also received verbal instructions on the use of behavioral objectives as a study guide. Behavioral

objectives, for the purpose of this study, are statements that describe what students will be able to do after completing a prescribed unit of instruction (Kibler, et.al., 1974, p.2). An example of a behavioral objective to be used is provided in the following section.

1. In a twenty minute test, after having read material and a fifty minute class discussion on the topic of groups in organizations, the student should be able to present the text's definition of a group, and differentiate between a small group and other types of groups, such as a line of people waiting for a bus.

The actual instruction was comprised of group discussions and a role-playing cooperative small group activity, as well as two testing sessions, one day apart, with the same test, to check the internal reliability of the evaluative instrument. Then finally, a survey of student satisfaction with the learning process in this chapter was administered, emphasizing that the student was to record his/ her satisfaction rating for this unit of instruction, exclusively.

PREDICTED RESULTS

The predicted results were that the students who received behavioral objectives prior to instruction would differ both in achievement level, as well as in level of satisfaction with the learning process, from students without behavioral objectives.

RESULTS

First, the means, standard deviations and variance of the two groups (n_1=19, n_2=17) were calculated for achievement on the tests.

	Behavioral Objectives Group	Control Group
n	18	22
$\bar{y}$	61.833	65.636
S	11.27	13.3
S^2	127.028	177

The following formula was used to find the pooled sample variance:

$$Sp^2 = \frac{(n_1-1)s_1^2+(n_2-1)s_2^2}{n_1+n_2-2}$$

thus,

$$Sp^2 = \frac{17(127)+21(177)}{38} = \frac{5877}{38} = 154.66$$

Since the formula for obtaining the t value is:

$$t = \frac{(y_1-y_2) - (\mu_1-\mu_2)_0}{(Sp^2/n_1 + Sp^2/n_2)^{1/2}} = \frac{3.803}{(154.66/18 + 154.66/22)^{1/2}} = 0.962$$

Since the critical t value at 95% significance level and 38 degrees of freedom is 1.69, and because the t score is less than 1.69, the null hypothesis was accepted.

The same process was repeated to obtain the t score of the satisfaction levels for the two groups.

	Behavioral Objectives Group	Control Group
n	19	17
$\bar{y}$	12.737	12
S	2.653	2.249
S^2	7.038	5.059

$$Sp^2 = \frac{18(7.038)+18(5.059)}{34} = \frac{207.635}{34} = 6.107$$

Since the formula for obtaining the t value is:

$$t = \frac{(y_1-y_2) - (\mu_1-\mu_2)0}{(Sp^2/n_1 + Sp^2/n_2)^{\frac{1}{2}}} = 0.893$$

Since the critical t value at 95% significance level and 34 degrees of freedom is 1.69, and because the t score is less than 1.69, the null hypothesis was accepted.

DISCUSSION

The results of this study show that no significant difference could be found between students who received and did not receive behavioral objectives, either in their achievement or satisfaction level.

Prior comprehensive surveys of existing experimental literature on the use of behavioral objectives came to the same

conclusion: that the finding was not conclusive for either side of the issue (Kibler, Basset, and byers, 1977; Kibler, Cegal, Barker and Miler, 1974). However, these surveys provided the caveat that the inconclusive finding could be a result of three major methodological flaws:

1. Absence of operational definitions and examples of instructional objectives used in the studies.
2. Lack of adequate pupil education on the use of instructional objectives.
3. Lack of teacher training on the use of instructional objectives in the instructional process.

This study attempted to study the utility of behavioral objectives while accounting for these three criticisms, in particular. However, the results still showed that behavioral objectives did not make a significant difference in students' achievement or satisfaction level.

One possible explanation for this result is that students, for some reason, may not have followed instructions on the use of behavioral objectives. Although they were asked to read the behavioral objectives carefully before reading the assigned material, and to use it as a guide to topics of importance in the chapter, they may not have read the objectives. Another confounding issue is that the students' reading material already had objectives for each chapter. As the objectives already in the text were mostly rote type objectives, students seemed to regard them as a study guide for tests which were given three times in a semester, excluding an optional test, and tended not

to even attempt to answer the questions unless preparing for tests. A preconception of taking the printed handout of additional behavioral objectives to be for test-taking purposes only, despite special instructions, could have resulted in the inconclusive finding.

Another possible explanation is that despite the randomized sampling procedure for the selection of the control and experimental group, there could have been pre-existing differences in achievement levels between these two groups. In fact, several students who did excellently in the first two tests given regularly during the semester were found to be in the control group. The pre-existing superior achievement level of the control group may have accounted for the inconclusive finding also.

CONCLUSION

Finally, it may simply be that behavioral objectives do not make any significant difference on student achievement or satisfaction level. Further study is still required, to take a firm stance either for or against the use of behavioral objectives. However, the author agrees with Kibler, Basset and Byers that "Rational arguments based on logic, however, will continue to weigh in favor of their use" (1977, p.283).

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Appendix A

Behavioral Objectives

1. In a twenty minute test, after having had reading asignments and a fifty minute class discussion on the topic of groups in organizations, the student should be able to present a definition of a group as offered in the text, and differentiate between a small group and other types of groups, such as line of people waiting for a bus.

2. In a twenty minute test, after having had reading assignments and class discussion on the material, the student should be able to present the primary function "roles" play within groups, as explained in the text.

3. In a twenty minute test, after reading assignments and class discussion, the student should be able to explain and evaluate Bales' "Dual- leadership" hypothesis and justify their evaluations by giving valid examples, according to the text.

4. In class discussion, after reading assignments on the material, the student should be able to give at least one example of a group norm of a group he/she belongs to, according to the definition in the text.

5. In a role-playing cooperative group activity, after reading assignments and class discussion on the topic, the student should be able to identify and act out the four stages in the process that groups typically go through to make members comply to group norms, as suggested by Litterer in the text.

6. In a twenty minute test, after having reading assignments and

class discussion on the material, the student should be able to identify the four methods of observing group processes, as specified in the text.

3. After having reading assignments and class discussion on the material, the student should be able to explain why studying about groups is important to him/herself.

Appendix B

Chapter 3 test

Please write your section number and name at the BACK of all the pages.

I. Multiple Choice (Each question is worth 7 points)

1. Which is the most appropriate example of a "group" as defined in the text?

a. a line of people waiting for a bus

b. four people sharing an elevator ride

c. the people in the faculty governing board at UNL

d. people at a department store sale

2. What is the description that best defines the function of rules within groups?

a. It allows the group to form stable, predictable patterns of behavior toward one another.

b. It helps the members become more humanistic communicators.

c. It encourages linear-type communication.

d. It sets informal rules or regulations that govern the behavior of group members under various circumstances.

3. Margaret was trying to observe the group process of her staff meeting. She concentrated on, for example, noting who spoke first, second and third and so on, and on who commented after whom. Margaret is using which method of observation?

a. Interactional analysis

b. Distributive analysis

c. Frequency analysis

d. Time analysis

e. Communication analysis

4. Betty is a member of the Campus Animal Protection Club (CAPC). She noticed that there were two major categories that remarks belonged to: Task related and social-emotional interaction. In analyzing the CAPC group's processes, she concentrated on noting four categories of comments: Positive social-emotional, task questions, task answers, and negative social-emotional comments. Which type of observation mentioned in the text best describes her approach?

a. Directional analysis

b. Distributive analysis

c. Frequency analysis

d. Time analysis

e. Communication analysis

5. What is the key concept of the book's definition of a group?

a. norms

b. roles

c. values

d. interaction

e. Sam has a tendency to criticize and be skeptical and thus provokes a lot of hostility and distrust among his co-workers.

The above sentence best describes which characteristic of a group?

a. personality differences

b. group structure

c. group norms

d. group rules

7. Gail has a warm and receptive personality, and is sensitive to the feelings of members of the Students for Amnesty Club, which she is a member of. She has a tendency to be more concerned with the interpersonal relations of the members, than getting the job done. According to this description, Gail is most likely to fill which role in this club?

a. task specialist

b. socio-emotional specialist

c. norm-setting specialist

d. problem-solving specialist

8. Kristin found it hard to come to work on time, since she commuted from quite a distance away. Consequently, she was late for work numerous times. After telling her the rules for starting work on time, and watching her for a while, her department chief talked to her about the problem, and asked her to make arrangements so she would be at work in time. Her co-workers also approached her and hinted about the problems they were having as a result of her tardiness. Kristin was going through which stage of Litterer's four-stage process for making deviant group members conform to group norms?

a. education

b. surveillance

c. warning

d. disciplinary or rewarding actions

9. Which is not one of the ways Sherif suggested for recognizing group norms

a. observing similar behaviors among a group of people

b. observing praise, reward, or correctives for certain behaviors

c. observing the convergence of behaviors over time

d. observing only personal relationships within a group

10. When Kurt was new on the job, he noticed that all the members in his department usually went out together for lunch, while he brought in a sandwich his wife had made for him, and ate alone at his desk. Gradually, friends began telling him where they went for lunch, and that a lot of socializing went on during lunch. What phase of Litterer's four stages of compliance to group norms would Kurt be going through?

a. education

b. surveillance

c. warning

d. disciplinary or rewarding actions

II. Short Answer Essay Questions(Each question is worth 10 points)

In the given space below please answer each question clearly.

1. Define and give an example of a small group, as specified in the text.

2. Explain Bales' "Dual Leadership" hypothesis as specified in the text, then justify your evaluation of its worth.

3. Several thousand people gathered at the State Fairgrounds in Lincoln for the Farmaid concert. Evaluate whether this is an appropriate example of a "group" as defined in the text. Specify why, or why not.

Appendix C

Section #: Name:

SURVEY INSTRUMENT

The purpose of this survey is to improve instruction by knowing more about the instructional process. The answers given will IN NO WAY AFFECT affect the grade you receive in class. Please think carefully and circle one appropriate number:

1. Did you enjoy studying this chapter?

Not at all Very much
1 2 3 4

2. Was studying for this chapter harder than for other chapters?

Not at all Very much
1 2 3 4

3. Was the material more interesting in this chapter than for other chapters?

Not at all Very much
1 2 3 4

4. Was the learning process more meaningful for this chapter than other chapters?

Not at all Very much
1 2 3 4

5. Overall, were you more satisfied when studying this chapter than other chapters?

Not at all Very much
1 2 3 4

(Add one)

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