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AUTHOR Dalis, Gus T.
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ABSTRACT

This study was conducted: (1) to provide data on whether student achievement can be influenced significantly by providing students, in advance of instruction, information on what will be expected of them as an outcome of instruction and, (2) to investigate various ways of communicating to students, in writing, that which is to be learned in class. The study focused on a teacher of 10th graders in five health and safety classes in a middle class high school. The students were randomly assigned to three treatment groups, each to be taught a specified unit. Group One received precise instructional objectives; Group Two was provided with vague instructional objectives, and Group Three was given a placebo in advance of instruction. A test was administered at the end of the unit to evaluate achievement of material contained in the unit. The findings included that students receiving precise objectives prior to instruction demonstrated greater achievement. One main conclusion reached was that it is possible to enhance classroom achievement by using precise instructional objectives in advance of instruction with high school learners. Tables and a bibliography are included. (Author/EW)

USING PRECISE OBJECTIVES TO ENHANCE STUDENT ACHIEVEMENT IN HEALTH EDUCATION

by
Gus T. Dalis, Ed.D.
Consultant, Health Education
Office of the Los Angeles County Superintendent of Schools
155 West Washington Boulevard
Los Angeles, California 90015

Controversy has existed over the years as to the importance of instructional objectives in the development of curriculum and instruction. Some educators indicate that viable teaching must be directed toward some specified outcomes stated in advance of the instruction that takes place in the classroom setting. While there seems to be some agreement among educators for the specification of instructional outcomes the accord as to how these outcomes should best be stated is not nearly so great. With the advent of programmed instruction there are those making a plea that objectives be given a great deal more specificity so that they may be more easily converted into instructional materials.

Despite emerging pronoucements as to the value and utility of instructional objectives to the teaching-learning situation, many teachers and curriculum workers still look upon objectives as necessary decorations to satisfy the curriculum theorist but beyond that objectives serve no useful purpose. With the existence of such a situation, perhaps there is a need to consider not only how instructional objectives should be stated but also the way they might best be utilized in the teaching-learning setting so as to favorably influence student achievement. Ultimately, the value of objectives to teachers will be the

degree to which these statements serve a useful purpose in the teaching-learning process.

A study was designed to determine what effect the communication of precise instructional objectives to students has on their learning. It was conducted (1) to provide data on whether student achievement can be influenced significantly by providing students, in advance of instruction, information on what is expected of them as an outcome of instruction and (2) to investigate various ways of communicating to students, in writing, that which is to be learned in class.

STUDY PROCEDURES

A teacher with five health and safety classes in a predominately middle and upper middle class high school was selected as the study teacher. Within the five classes there were a total of 143 tenth grade students.

At the beginning of the study each of the 143 subjects was randomly assigned to one of three treatment groups within each of the five classes. The subjects were assigned to a treatment group by using a table of random numbers. As part of the study the teacher was asked to conduct a three week unit on growth and development within the health education program. None of the content in the unit was presented in the high school course of study prior to the time of this study. The unit was developed in accordance with the School Health Education Study [27:42-45] concept "growing and developing follows a predictable sequence, yet is unique for each individual." The first four of the five unit objectives indentified by the School Health Education Study at the high school level for this concept served as the framework for the development of the teaching unit. The unit was designed as a

comprehensive teaching "package" for teacher use and included an identification of content related to each unit objective and a variety of learning opportunities keyed to each unit objective.

From each unit objective a number of related precise and vague instructional objectives for student use were developed. The precise instructional objectives contained explicit specific content, the kind of overt behavior expected of the learner with respect to this content, conditions to be imposed upon the learner when he is demonstrating mastery of the objectives, and the inclusion of what will be acceptable performance. The vague instructional objectives were somewhat similar to the precise instructional objectives except that both the objective content and behavior dimensions were general. In the vague objectives the content was presented in broad and general language. The behavioral terms used in these objectives were open to more interpretations than the terms used with the precise objectives. Also, the vague objectives did not contain a statement of conditions to be imposed upon the learner when he is demonstrating his attainment of the objective, nor was there an indication of what would be acceptable learner performance.

A total of sixteen precise and vague instructional objectives were developed from the four teaching unit objectives. Both the precise and vague instructional objectives represent a sample of a population of such objectives that could have been developed and that were implicit within the four unit objectives. In addition, sixteen separate short paragraphs of written health information unrelated to classroom learnings were developed to serve as a placebo with the control group of students. Each of the sixteen paragraphs of written health

information, precise instructional objectives and vague instructional objectives was placed on a separate sheet of paper. These sheets of paper were referred to as "messages" whenever they were discussed with the subjects.

For each precise instructional objective one multiple choice test item was developed to assess the student's understanding of the objective. The same test items were used with the respective vague instructional objectives since each item was but a sample of many possible test items that could have been prepared for these more general objectives. Therefore, each message containing either a precise or vague instructional objective contained a relevant message understanding test item. The instructions on each message sheet directed the subject to select from an array of four choices the one that best went with their objective. For the written information used as the placebo a time-consuming activity comparable to the test items for the precise and vague instructional objectives was developed to accompany this information.

In conducting this study the Posttest-Only Control Group Design [7:195-197] was employed. A sixty-eight item criterion test was developed to assess student achievement at the conclusion of the growth and development unit. A comparison of student achievement was conducted among those subjects provided with precise instructional objectives (Group one), those provided with a set of vague instructional objectives (Group two), and those provided with a placebo (Group three) in advance of instruction.

At the beginning of the study the subjects were told that they had been selected to participate in an experiment to determine whether written messages to be given them periodically during a three week

period of time would be of any assistance in their classwork. They were informed that different people in the class would be receiving different messages and that in order for the experiment to work it was necessary to maintain absolute secrecy. Initially, the subjects were told that their grade would not be affected by their different messages and that they could withdraw from the experiment at any time without penalty to their class standing. During the three week unit, the teacher would pause at points indicated in the teaching unit plan and provide each student with his appropriate message. The messages were prepared in advance with the student's name on each folded message sheet. Throughout the experiment the teacher remained unaware of the specific character of the information being given the subjects.

On the last day allocated for the experiment the criterion test was administered to evaluate achievement of material contained in the growth and development unit. Also, each subject responded to an "anonymous" opinnaire coded in such a fashion whereby it was possible through a classroom seating chart to identify each respondent. One opinnaire question concerned the gaining of any information about messages given to other students. Those respondents who indicated that they had gained information about messages from someone else were dropped from the experiment. Six subjects were dropped for this reason. A second question concerned the amount of study time spent outside of class each day during the study of growth and development.

RESULTS

Contained in Table 1 are data on the analysis of variance of the criterion test dependent variable between treatment groups. The very high F ratio of 10.809 clearly shows that there was a treatment effect

favoring Group one, the group presented with precise instructional objectives prior to instruction. Therefore, the hypothesis indicating

Table 1

Analysis of Variance of Criterion Test Among Dependent Variable Treatment Groups

Source	Sum of Squares	df	MS	F
Between	2106.170	2	1053.085	10.978*
Within	12470.151	130	95.924	
Total	14576.321	132		

*p $\prec$ .01

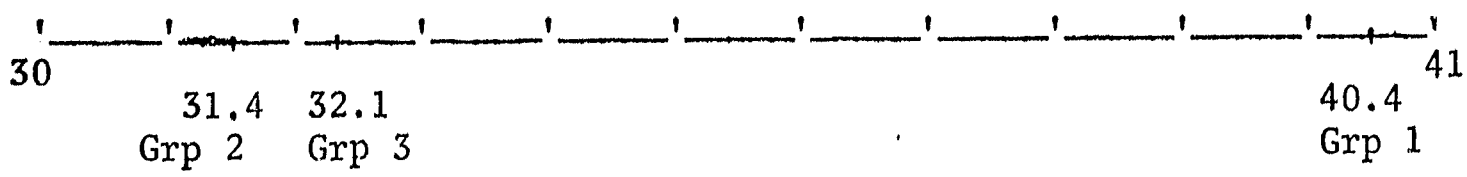
F .01 (2, 130) = 4.79 (35:433)

that the group presented with precise instructional objectives prior to instruction will demonstrate greater achievement than will the group presented with vague instructional objectives is accepted beyond the .99 level of confidence.

The plot of the three treatment groups on the criterion test score as seen in Figure 1 graphically shows that Groups two and three are relatively close together while Group one is significantly separated from these two groups.

Figure 1

Plot of Means on Criterion Test Score



Thus, the hypothesis that indicated that the group presented with either precise or vague instructional objectives prior to instruction will demonstrate greater achievement than will the group presented with a placebo can be assumed to be rejected. Major significant differences are due to the high level of achievement of Group one on the criterion test.

Group one obtained a mean on the message understanding task of 8.9. The standard deviation for this group was 4.6. The vague instructional objective group (Group two) obtained a mean of 2.2 with a standard deviation of 1.6 on the message understanding task. The mean difference between Groups one and two was 6.7. When computed, the value for t was equal to 67.25 which is significant at the .999 level of confidence. Since there was an extremely high t value, which shows the significance of differences between Group one and Group two, there is probably a real difference between these groups on message understanding. Due to the marked differences in standard deviation between the groups caution is warranted on accepting the extremely high t value. The hypothesis can thus be accepted that the precise instructional objective group will be more able to select activities that go with their objectives than will the vague instructional objective group.

By using both the Kuder-Richardson formula 20 and 21, it was found that the reliability for Groups one and two was .90 on the message understanding test. This very high value indicates that the test as a whole, regardless of the treatment group, is particularly reliable, and internally consistent. A .90 reliability co-efficient is quite large for a 16 item test.

By way of description, less overall average time was spent in

studying outside of class by Group one when compared with Groups two and three. Group one actually spent an average of 17.4 minutes, Group two an average of 27.0 minutes, and Group 3 an average of 20.4 minutes studying daily outside of class. This average amount of time spent studying among the three groups, however, was not significantly different at the .99 level of confidence.

CONCLUSIONS

According to the findings in this study it was possible to enhance classroom achievement by using precise instructional objectives in advance of instruction with high school-age learners. These objectives, however, must be precisely stated otherwise their value to learning efficiency is doubtful. In fact, instructional objectives that are vaguely stated and are general both in content and behavior may deter learner achievement when given to him prior to instruction.

Evidence from this study supports the idea that individuals with precise instructional objectives were quite able to select activities related to these objectives. Whereas those individuals guided by vague instructional objectives seemingly became confused and were unable to select activities that related to their objectives. Apparently the vague objectives did not provide the necessary direction and information needed to facilitate the matching of relevant activities to instructional objectives.

The study findings revealed that the precision of stating instructional objectives did not affect, in one way or another, the amount of time spent studying daily outside of class by those learners being guided by these objectives.

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