

**The Effects of Task Instruction Sheets on the
Performance of Eleventh Grade Students
Studying Vocational Horticulture**

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In recent years, managing a vocational laboratory has become an increasingly difficult and complex task facing many vocational educators. Specialized instructional areas, diverse groups of students, and extended laboratory time have caused educators to seek alternate ways of providing practical "hands-on" instruction when traditional supervised occupational experience programs (SOEP) were not possible. One alternative has been the well-equipped modern laboratory found in many of today's area vocational schools. The laboratory, while falling short of real world occupational experience programs, provides the learner with many of the practical experiences obtained through supervised occupational experience programs. As laboratory time was extended, and increased value and emphasis was placed on the laboratory experience, the problems of generating meaningful educational experience in the laboratory increased.

A fundamental precept of laboratory instruction is that all students are capable of engaging in self-directed inquiry and learning. An ideal teaching situation would occur if all students were at the developmental level required for this type of instruction. Rarely, however, are all students in the laboratory able to provide their own "structure" in an unstructured learning situation. It is unlikely that all students in the laboratory will be able to identify problems that interest them, and then proceed to develop plans to solve these problems. Tanner (1978) suggested that the key to the problem is in the curriculum. A well designed curriculum with appropriate curriculum materials which carefully organize and structure the self-directed learning of the student will greatly enhance the value of the laboratory experience for each student.

Task Instruction Sheets

Laboratory instruction which meets the needs of the individual requires that teachers define the objectives of their instruction in terms of student needs, and then use instructional strategies and curriculum materials which modify student behavior towards those needs.

Task instruction sheets are curriculum materials which advocate the concept of individualized instruction as a technique for managing the laboratory. Specifically, task sheets are designed to supplement classroom instruction by providing the learner with an individualized learning experience in the laboratory. Task instruction sheets spell out:

- a) What is to be learned by each learner;
- b) Who is to do the learning;
- c) The observable behavior expected after instruction;
- d) The condition under which the learning will occur; and
- e) The minimum level of acceptable performance.

As such, task sheets address the individual needs of the learner, and should contribute to more effective laboratory management.

Purpose of the Study

This investigation sought to answer the question: What effect, as measured by students' score on an end-of-unit mastery test, would the use of task instruction sheets have on students' level of mastery when being taught a unit on poinsettia production? The major hypotheses investigated in this study were:

1. Students taught a unit on poinsettias using a series of task instruction sheets will score significantly higher on the criterion-referenced posttest than students taught a unit on poinsettias without the use of task instruction sheets.
2. There will be a positive relationship between students' scores on a criterion-referenced posttest, and students' reading aptitude, measured by a score on a standardized reading test.

Methodology

To test the major hypotheses, a posttest-only control group design was selected. As described by Campbell and Stanley (1963), this is a true experimental design. The experimental units for the study were eleventh and twelfth grade classes of vocational horticulture students. Twelve classes were randomly assigned to either the experimental or control level of the treatment. Each level of the treatment consisted of six intact classes with a total enrollment of 207 students. Of the 207 students participating in the study, 90 (43.5%) were in the control group, and 117 (56.5%) were in the experimental group. The average class size for the experimental group was 18, while the average class size for the control group was 15. No teacher participating in the study had less than two years teaching experience.

To verify the effects of random assignment, student data on grade point average and reading ability were collected for each student at the beginning of the study. The data were subjected to t tests to determine if significant differences existed between the means of the experimental and control groups. The data indicated no significant difference between the mean reading scores of the control and experimental groups, $t = 1.07$, $p > .05$, nor any significant difference between the mean grade point averages of the control and experimental groups, $t = -.72$, $p > .05$.

Classes in the experimental group received a series of task instruction sheets on poinsettia production along with a monograph describing the nature and use of task instruction sheets. Those classes in the control group received neither the task sheets nor the monograph describing their use. Rather, teachers in this group were asked to teach the unit on poinsettia production as they had done in previous years. Both groups received the same end-of-unit posttest. In addition to the manipulated independent variable method of instruction, one attribute variable, reading ability, was measured.

Data and Instrumentation

A 35-item multiple choice poinsettia production posttest was developed to quantify the dependent variable, student achievement. The posttest was comprised of items designed to cover the major points emphasized in teaching a unit on poinsettia production. Content validity for the posttest was established by a review panel of selected horticulture teachers in Ohio. The posttest instrument was pilot tested with students enrolled in three horticulture departments in Franklin County, Ohio. After completion of the pilot testing, the data were processed to locate non-discriminating test items and to es-

establish the reliability of the test. A reliability estimate of .78 was calculated using the Kuder-Richardson 20 formula.

The attribute variable, reading ability, was measured by administering a standardized form of the Gates-MacGinitie Reading Test. All eleventh grade students participating in the study were tested using Level F, Form 1 of the standardized test.

A 42-item questionnaire was developed to monitor the teaching techniques used by teachers providing instruction on poinsettia production. The questionnaire was divided into two parts: A and B. Part A was completed by every teacher participating in the study and was designed to collect information on general instructional techniques used by teachers when teaching a unit on poinsettia production. Part B was completed only by those teachers in the experimental group, and was designed to collect specific information on how experimental teachers used the poinsettia task instruction sheets during the course of their instruction on poinsettia production. The questionnaires were administered to teachers after completion of the poinsettia unit.

Data Analysis

Hypothesis one, postulating significant difference between the mean posttest scores of the experimental and control groups, was tested by using analysis of covariance. To control for the variation in reading abilities of the students, and to evaluate the true effects of the treatment, mean classroom reading scores were used as the covariate. The unit of analysis used was schools. The dependent variable was mean classroom reading scores.

Hypothesis two was analyzed by calculating a Pearson product moment correlation coefficient to determine the relationship between mean classroom posttest scores and mean classroom reading scores.

Findings

The results of the analysis of covariance for testing hypothesis one revealed a significant difference, $F(1,11) = 5.16, p < .05$, in the students' posttest scores at both levels of the treatment, method of instruction. Table 1 provides F values for the main effects of treatment, method of instruction, and for the effects of the covariate, reading scores. When the effects of the covariate, reading ability, were held constant, the series of task instruction sheets, poinsettia production, made a significant difference in student achievement, as measured by the students' posttest scores.

Table 1

Analysis of Covariance: Adjusted Mean Posttest Scores by Treatment

	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Reading scores	1	32.84	32.84	4.05
Treatment	1	41.84	41.84	5.16*
Residual	9	72.90	8.10	
Total	11	147.58	13.41	

*p<.05

The results of the Pearson product moment correlation coefficient used to test hypothesis two revealed a moderately positive relationship between mean reading scores and mean posttest scores. A correlation coefficient of .47 with an n of 12 suggests a moderately positive relationship between posttest scores and reading scores, but is not sufficient to reject the null hypothesis at an alpha level of .05. Thus the researchers concluded that the data did not support the research hypothesis and the omnibus null hypothesis was retained.

Conclusions and Recommendations

It was concluded that task instruction sheets are capable of causing significant increases in student achievement and, as such, should be given consideration as an important component of effective laboratory management. In addition, every teacher using them reported that task instruction sheets:

1. Make it easier to prepare the classroom and laboratory portions of the poinsettia unit;
2. Suggested changes in how to present the content matter of the poinsettia unit; and made them more aware of needed teaching materials, equipment, and facilities.

The experimental group of teachers reported that task instruction sheets help contribute to greater student achievement by organizing and structuring both the laboratory and classroom portions of the poinsettia unit. Generally, teachers felt that task instruction sheets helped to make the job of teaching easier, created minimal additional work, and provided accurate information for growing a crop of poinsettias.

Reading levels for both the experimental and control group were established by administering a standardized version of the Gates-MacGinitie Reading Test. A *t* test on the mean reading scores of each group determined that the groups were statistically equivalent. However, the data did not support the hypothesized relationship between reading ability and posttest scores. The analysis produced a correlation coefficient of .47 which was not statistically significant at an alpha level of .05. It is the opinion of this investigator that the lack of statistical significance was a direct function of sample size. The true experimental design of this study dictated that the analysis be performed with a sample of 12. The conclusion to be drawn is that future studies which examine relationships between attribute and dependent variables would yield more valid and statistically significant results if the size of the sample were increased considerably.

Based on the findings of the study and the experience of the investigator in conducting the study, it is recommended that teachers engaged in teaching vocational agriculture courses, with extended laboratory periods, give serious consideration to integrating task instruction sheets into their normal units of study. The results of this study have demonstrated that when task instruction sheets are used in conjunction with normal lesson planning, the increase in student achievement is significant.

References

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- Tanner, L. N. (1978). *Classroom Discipline for Effective Teaching and Learning*. New York;NY: Holt, Rinehart and Winston, Inc.