

CONSIDERATIONS IN EVALUATING HUNTER EDUCATION PROGRAMS

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Abstract: The need for effective hunter education is great and growing. Program effectiveness should be evaluated by agency administrators and external authorities. Administrators can perform a self-evaluation, based on a new model of the ideal program developed by the Hunter Education Committee of the International Association of Fish and Wildlife Agencies and the North American Association of Hunter Safety Coordinators. The model recognizes the role of external evaluation to penetrate the difficult questions of educational effectiveness of the program. Major concepts of educational evaluation, including a discussion on threats to the validity of evaluation research are discussed. The Virginia hunter education program is being evaluated to determine if graduates have sufficient knowledge of safety and ethics and if graduates behave closer to ideal hunters in the field than hunters who have not participated in the program.

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The need for effective hunter education programs is growing. Not only are the anti-hunting forces continuing to use well funded propaganda, legislative and judicial campaigns, but also fewer and fewer Americans are growing up with the tradition of hunting. The 80% of the public that neither hunts nor is strongly against hunting suspects that hunters are liable to shoot one another, leave animals suffering in the woods and fields, and abuse the personal and property rights of others, and that hunters are generally inept (Rohlfing 1979).

In a recent study of landowner-sportsman relations in central Virginia, which is about as rural an area as can be found in the eastern United States, a 4th of the landowners claimed hunters damaged fences and gates. Nearly half reported damage to farm roads and fields, and over half had experienced trespass (Hauser, unpubl. manuscript). There is no room to seriously doubt that unsafe, illegal, and unethical behavior by sportsman threatens the tradition of public hunting in this country. The seriousness of this threat has been recognized by International Association of Fish and Wildlife Agencies (IAFWA). Their report (Evenden et al. 1981) contains important suggestions for existing hunter education programs, including a call for evaluating program effectiveness. Before changing an existing hunter education program or implementing a new program or program component, a thorough evaluation should be conducted. This paper outlines the administrative evaluation called for in the IAFWA reports, points out where specialized educational evaluation and evaluation research fits in, discusses some complexities of educational evaluation, and, finally, shows how the Virginia program is being evaluated.

A NEW SELF-EVALUATION SYSTEM

Recently the North American Association of Hunter Safety Coordinators and the IAFWA Hunter Education Committee developed a comprehensive, 13-page form to assist agencies in evaluating their hunter education programs. The form is presented in Appendix M of the IAFWA report (Evenden et al. 1981). The bulk of the questions are yes-no, although some demand access to quantitative records. Given good reports, the form could be filled out and scored in a working day, or less. Table 1 provides a list in the major evaluation categories and their point weights.

Table 1. Self-evaluation system summarized from Appendix M of Hunter Education in the United States and Canada with recommendations for Improvement (Evenden et al. 1981).

General Program Information-----	(0 points)
Part I: Student Certification Program	1,840
Course Content	840
Demonstrated Abilities	360
Advanced/Special Student Programs	400
Coverage of State or Province	24
Part II: Instructor Certification Program	1,740
Recruitment of Instructors	360
Training of Instructors	520
Evaluation	400
Communication	280
Instructor Requirements	180
Part III: Recruitment and Public Awareness Program	660
Part IV: Teaching Aids and Materials	720
Part V: Program Structure, Personnel and Records	648
Part VI: Studies and Surveys	320
Part VII: Range Program	720
Part VIII: Hunting-Related Accidents	352
Total Possible Score	7,000

The self-evaluation system is based on a conceptual model of the ideal hunter education program. Priorities for program improvement are equal to the points lost in the various categories. For example, if background investigations are not performed prior to accepting a volunteer instructor, the program loses 60 of the 320 points allocated for recruitment of instructors. The advantage of the point system is that it helps set priorities and, by its application year after year, can demonstrate steady progress toward agreed upon performance standards.

Part of VI of the self-evaluation, the need for studies and surveys, is broken down into analyses of behavior and attitudes, overall program evaluation, game law

violation, hunter knowledge, student survey, and lost hunter survey. Such studies require not only thoughtful formulation of research objectives but also careful application of research methods developed by sociologists, psychologists, educators, and statisticians. Reluctantly perhaps, but nevertheless, hunter education program administrators in each state will have to communicate with social scientists if they are to know how well their programs change the beliefs, attitudes, and behaviors of their students.

ATTAINING VALIDITY IN EDUCATIONAL EVALUATION

Education is a much studied and argued over process. That we learn is certain. How we learn and how we value and act on what we learn fill many volumes, but accurate predications and explanations elude us. Evaluation of education is fraught with difficulties in defining and measuring the process and products of education. Not surprisingly, there is no generally accepted procedure for evaluating educational programs. Yet the need for program evaluation is undeniable and, when the dangers and strengths of alternate evaluating procedures are known, reasonable choices can be made.

The word evaluation is defined variously in the literature, depending on the persuasion of the authority. Cooley and Lohner (1976) emphasized gathering and organization of information to facilitate decision making. House (1977) wrote that evaluation was an act of persuasion, while Worthen and Sanders (1973) believed evaluation determined the worth of the subject. Typically, the evaluator gathers large amounts of information by a variety of methods to assess and communicate the effectiveness and worth of a program.

The most useful evaluation of a hunter education program will be performed by someone who is competent in educational evaluation and has a good knowledge of hunting. This method was used by Jackson and Norton (1979), who relied on retired game wardens to help conduct field observations of waterfowl hunters.

Next in consideration is the need for a realistic plan of attack, known in the literature as an evaluation design (Fitz-Gibbon and Morris 1978). The goal of the evaluation is to provide the decision-maker quantitative evidence on program effectiveness. Usually the requirements of random assignment of subjects and treatments for true experimental designs are impossible to meet in evaluating in hunter education. Instead non-equivalent control groups and "quasi-experimental" designs are used (Cook and Campbell 1979, Fitz-Gibbon and Morris 1978). In these designs, background information about the student groups (subjects) receiving the hunter education program (treatment), compensates for absence of true experimental controls. However, there are numerous difficulties in determining the usefulness of conclusions derived from quasi-experimental designs. These difficulties are referred in evaluation literature as "threats to validity." Cook and Campbell (1979) recognized 4 types of design validity: (1) statistical conclusion validity; (2) internal validity; (3) construct validity; and (4) external validity.

Statistical conclusion validity permits drawing conclusions from covariance of variables. For example, the data indicate that student participation varied positively with student achievement. This seems likely, but a thorough evaluator would check for 7 different threats to validity, any one of which might cast doubt on the conclusion (see Cook and Campbell 1979 for a discussion). One of the 7 threats is

a low statistical power, which is a function of small sample sizes. Statistical procedure demands extreme differences in measurements be observed when studying small samples before the term "significant" difference is used.

Internal validity means that true, direct cause and effect relationships are known. When an evaluation has internal validity, alternate or 3rd-variable causes can be excluded. We would like to believe that student scores on the final exam truly reflect knowledge gain of all the material presented. But, if instructors review the examination questions just prior to the exam, rather than present a balanced overview of the material, the student scores will not adequately measure total learning. This threat to internal validity is termed "history," and it is one of 9 distinct threats discussed by Cook and Campbell (1979).

The 3rd form of validity is construct validity. This is semantics. Do the course materials, examinations, and instructors use the same words with same meanings consistently and do the students understand these meanings? Again, Cook and Campbell (1979) present a through discussion.

The final form of validity is external validity. With it, the results of the evaluation can be applied to the entire program (Cook and Campbell, 1979). Threats to external validity concern the interaction of the treatment (course) with selection of persons, settings and time used for the evaluation studies. To avoid these threats, evaluators should study subjects of various ages, courses taught in different typical settings in various regions, and spread their studies over the year.

Education evaluation is a difficult and complex field. Constraints in time and money available for evaluation studies plus the great variation in the quality of hunter education audiences, instructors, materials, and settings means that an evaluation free from threats of validity is practically impossible. Nevertheless, useful evaluations are both possible and necessary for program improvement.

EVALUATING THE VIRGINIA HUNTER EDUCATION PROGRAM

Begun in 1956, the Virginia Hunter Education Program has graduated approximately 300,000 students. Its 6-hour program is voluntary, adapts the basic program laid out by the National Rifle Association and North American Association of Hunter Safety Coordinators to Virginia conditions. Prior to 1980, no formal evaluation of the program had been made. Though, comprehensive, our evaluation is constrained by time and resources, resulting in selection of priority objectives. In consultation with James N. Kerrick, Hunter Safety Coordinator and Harry L. Gillam, Chief of Education of the Virginia Commission of Game and Inland Fisheries, we agreed to determine (1) the effectiveness of the program in increasing the hunting and safety knowledge of students and (2) if the hunting behavior of graduates is more safe, ethical and legal than the behavior of people who have not had the course. In our final report, we will make specific recommendations for improving the program based on the findings. We are both hunters, are certified hunter education instructors, have a professional interest in the human dimensions of wildlife management (Bromley and Bryan 1980, Kerrick et al. 1978) and one of us (Hampton) has acquired graduate-level skills in educational measurement and evaluation.

To evaluate knowledge gain, we accepted a Tylerian model, which is one of the goal-attainment models (Popham 1975). We are comparing student performance

on examinations with behaviorally stated objectives, to see how those objectives are being met. Behavioral objectives specify how much the student will know or perform after the course (treatments). Since the course is taught as part of the physical education program in some schools but not others, we can administer pre and post-tests to groups who will and will not have to take the course. Behavioral objectives for the course are being developed through discussion with program administrators and analysis of teaching materials. We are controlling for construct validity, or semantic validity, by conducting an item analysis of the currently used final examination. Questions that are missed or answered correctly too often are being eliminated. Furthermore, a pool of valid questions on each subject area is being developed. The exam will be weighted so that the number of test questions from each content area of the course reflects the time and priority given to each area by administrators and course materials. The testing instruments will therefore have construct validity. The results of our study will indicate which areas, if any, in the instructional program need revision so that students can better learn the material.

Our 2nd objective is to determine if the hunter education graduate is a safer, more ethical, and more law abiding hunter than those who have not taken the course. We chose to observe dove hunters in the field, which is a direct assault on the objective, rather than rely on indirect evidence obtained from survey research. From our own experiences, those of hunters who specialize in dove hunting, analysis of what is taught about safety and ethics in the program and the game laws, we developed a model of an ideal dove hunter. A field observation form was devised which itemized behaviors which would detract from the ideal. It was printed in black ink on a rusty-brown cardstock and cut to fit into a typical hunting hat. A cadre of 20 observers was trained to observe and record violations. Their accuracy was measured by comparing their observational records of an actor with the known depreciative behavior of the actor. On the first 2 Saturdays of the dove season the observer team dressed and acted like normal hunters while they unobtrusively observed about 100 hunters for 30 min each.

To guard against threats to external validity, background information must be analyzed for observed hunters. The problem of how to observe hunters and get their name, phone number, and address, and their permission to contact them after the season was overcome by hiring interviewers. The interviewers were college students who carried clip boards. They knew the observers by face and name and found out from them who had been and would be observed. Observers numbered their subjects sequentially and were careful to note distinguishing features of each observed hunter. At the end of the day observers and interviewers got together and matched hunter identity sheets with observational records.

The results of the observation study are yet to be analyzed. The statistical need for approximately 50 records on graduates may dictate continuation of the study next year. Results of the entire evaluation will be published and made available to state agencies upon completion.

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CONCLUSION

Evaluation of educational programs, including hunter education, is not a simple and straightforward process. There are many approaches, models, designs, and analytical strategies that lead to different views of "reality." There is no cookbook solution to an evaluation. However, evaluators should be aware of the complexity of evaluation in order to make informed choices regarding evaluation approaches.

Even though it is difficult to design and conduct valid evaluations of hunter education programs, these studies will provide solid recommendations for improving these essential programs.

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