Recharging the Old Battery — Is It Effective?

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C'est au cours des ateliers pédagogiques que la formation des enseignants en exercice se poursuit. On remet très souvent en question l'efficacité du programme qui a institué ces ateliers. Il y a de nombreux problèmes au niveau de l'évaluation: on ne dispose pas de données concernant le rendement de l'enseignant et de l'élève avant la participation de celui-là aux ateliers. Cette étude veut faire l'évaluation de l'efficacité des ateliers en se servant du modèle de Gentry (1971) (on compare le résultat des tâches qui ont été assignées aux participants d'un programme, au commencement et à la fin de celui-ci) pour mesurer le progrès réalisé par les enseignants dans les domaines que visaient les objectifs de l'atelier. Le pré-test cherche à découvrir les points forts et les points faibles pour en faire un diagnostic et proposer des éléments de solution; lorsqu'on compare les résultats du pré-test et du post-test, on s'aperçoit qu'il y a eu une amélioration sensible. Les enseignants qui faisaient partie du groupe-témoin n'ont pas fait preuve d'une telle amélioration. Ce modèle d'évaluation est un premier essai vers l'élaboration d'un modèle plus complet et complexe.

In-service training in the form of workshops is a widely spread form of teacher training program with the announced purpose of making up for deficiencies of pre-service training, assisting teachers to keep pace with rate of developments, updating knowledge, enabling teachers to cope with new techniques, helping teachers meet new expectations from the community, refreshing certain aspects of earlier training, or familiarizing them with administrative changes. Workshops at present occupy an important — often the primary — position in post-service education.

The format varies. Bush (1971) refers to four current types of in-service education programs: (1) expository exhortation, (2) demonstration teaching, (3) supervised trials, and (4) analysis of performance.

The most frequently encountered form is the lecture type. Group discussions, brainstorming, buzz sessions, role-playing, micro-teaching, and supervised trials are other types of delivery of in-service training which have great potential. While some school districts limit themselves to a district-wide one-day-a-year ritual, mislabelled as professional development day, others offer various opportunities during the year for in-service, usually held after school or on weekends.

The question of effectiveness of in-service programs is seldom raised, rarely established, and consequently is hardly ever researched. Reasons for this might be that in-service often does not concern itself with carefully planned, goal-oriented activities directed toward objectives of teacher performance, or no importance is placed on evaluation of its overall effective-

ness, or perhaps the organizers do not expect real change in teacher behavior as the logical outcome. Without specification of workshop objectives in advance, measurement of the outcome is not, of course, possible.

The program's effectiveness lies in the teacher's classroom performance and ultimately in the student's learning (Rubin, 1971). By making objectives specific, by isolating and operationally defining the teacher's and student's behavior that we seek to achieve, we make evaluation of in-service programs a distinct possibility.

The manner of evaluation itself, however, poses a problem since normative data on teacher and pupil performance prior to the in-service training program is seldom available for pre- and post-comparison in terms of the respective training objectives.

While Bush (1971) claims that a combination of demonstration teaching, supervised trials, and analysis of performance represents the most powerful treatment, he does not support this claim by research evidence. Gentry (1971), on the other hand, developed a model for the evaluation of workshops by using a pre- and post-training assignment. This evaluation was based on the assumption that a teacher who makes appropriate discriminations, in writing on an assignment depicting a classroom problem, would be likely to make similar discriminations in an actual classroom situation and subsequently to intervene more effectively with the problems of his students. Thus, theoretically, the difference between pre- and post-assignments related to specific workshop objectives could prove to be a relevant measure for evaluating the effect of the workshop on the teacher participants.

The present study combines the four types of in-service education program components specified by Bush (1971) and uses Gentry's model (1971) to evaluate the effectiveness of an in-service training workshop, and, at the same time, to establish existing areas of strength and weakness that are to be changed by the workshop.

PROCEDURE

In-service training for the experimental group consisted of five 1-day group sessions and three classroom visits to each participant by the experimenter, with subsequent contact through correspondence and 1-day field trip. The control group did not participate in the workshop or classroom visits.

Subjects

Learning-assistance teachers were selected as workshop participants. Ten were randomly assigned to the experimental group. Ten control subjects were matched on the basis of years of training, years of teaching experience, age, and similarity of teaching assignment. All subjects were given a pre-assignment prior to the workshop. The experimental group received in-service training. At the termination of the workshop, all subjects completed a post-assignment.

Objectives and Content of the In-Service Training Workshop

The goal of the in-service training was to provide learning-assistance teachers with the skills to functionally analyse behavior and to implement teaching strategies using direct daily measurement and the standard behavior chart for altering academic and social behaviors of selected students with problems.

More specifically, the following behavioral objectives were chosen for the workshop in order to provide teachers with an objective method of looking at important aspects of the educational setting and sorting these out for effective intervention.

1. Pinpointing and specifying relevant and desirable academic and social target behavior, in behavioral terms, for individual children.
2. Timing, counting, and assessing daily the incidence of academic and social behavior selected for intervention.
3. Recording environmental events relative to the selected academic and social behavior.
4. Implementing effective teaching strategies for the selected academic and social behavior.
5. Recording systematically changes in teaching and management strategies of intervention for the targeted academic and social behaviors.
6. Presenting and interpreting the results of projects in the workshop, with participants using the standard behavior chart.
7. Slicing the academic and social curriculum into appropriate steps to provide the learner with success.
8. Using reading and math materials for functional evaluation and for helping students with problems to reach criterion levels of performance.
9. Using supportive personnel, teacher aides, peers, parents, to monitor the student's academic performance and social behavior.

Workshop Activities

The participants engaged in four types of activities: (1) reading assigned materials; (2) attending five full-day group sessions; (3) visiting the Experimental Education Unit, University of Washington, Seattle, to observe direct daily measurement techniques; (4) intervening with the academic and social behaviors of children with problems, using strategies of functional analysis and direct daily measurement.

The following reading materials were assigned, referred to, and quoted during the workshop: *Teaching: A Course in Applied Psychology* (Engelmann, Becker, & Thomas, 1971), *Precision Teaching: A Critical Training Sequence* (Kunzelman et al., 1970), *Teaching Children with Problems* (Wallace and Kaufmann, 1973), *Pocketful of Praises* (Csapo, 1973), *Living with Children* (Patterson & Gullion, 1968).

The full-day group sessions consisted of lectures, role-playing, group discussions, and micro-teaching. The participants were guided to pinpoint academic and social behaviors, describe present teaching management

procedures in detail, collect direct daily measures on performance under the existing conditions, devise intervention techniques for changing the targeted behaviors, implement the strategies, analyze results, and make data-based decisions for reaching specified objectives for these students. The following visual aids were used to underscore relevant procedural points: *Structuring the Classroom for Success* (Volkmor, Langstaff, & Higgins, 1974), *Precision Teaching* (Council for Exceptional Children, 1972), *Who Did What to Whom?* (Mager, 1972), and *Teaching Language to Psychotic Children* (Lovaas, 1968).

The one-day visit to the Experimental Education Unit, University of Washington in Seattle, provided an excellent opportunity for observation and discussion of direct daily measurement and the use of the standard behavior chart for making data-based decisions.

The classroom visits provided the opportunity for supervised trials with each participant of the experimental group. The teachers were asked to make specific teaching plans for at least two of their students with problems. The classroom visit also allowed for the collection of reliability data on teacher and student performance.

Pre- and Post-Assignments

For the pre-assignment and post-assignment, two different narratives were used describing a child with problems, his classroom routine and performance. All subjects were asked to write a complete management plan describing all aspects of the situation as existed (IS) and the intervention they would use (DOES) to help the student to reach specific educational objective. The five variables in the IS–DOES plan (Martin and Hulten, 1970) include the overall environmental setting (P); stimulus events, or components of the environment planned by the teacher and occurring prior to the student's response (PE); responses, or precisely pinpointed behavior of the student being measured by the teacher (MC); contingencies, or numerical relationship or ratio between response and arranged event (A); and consequences or events which occur in the environment and are dependent upon the student's behavior according to the stated contingency (AE).

Behavior Change Plans

The workshop participants implemented teaching plans of intervention. Of these, 19 projects dealt with academic acceleration targets, 16 with academic deceleration targets, and 3 with social deceleration targets.

Evaluation

The participants were asked to complete an evaluation form commenting on the various objectives of the workshop.

RESULTS

The answers to the pre- and post-assignments were scored 100 points or less on the basis of (1) completeness of detail; (2) inclusion of environmental components, including setting; (3) systematic alteration of the environment during intervention.

Figures 1 and 2 display visually the pre- and post-assignment scores for

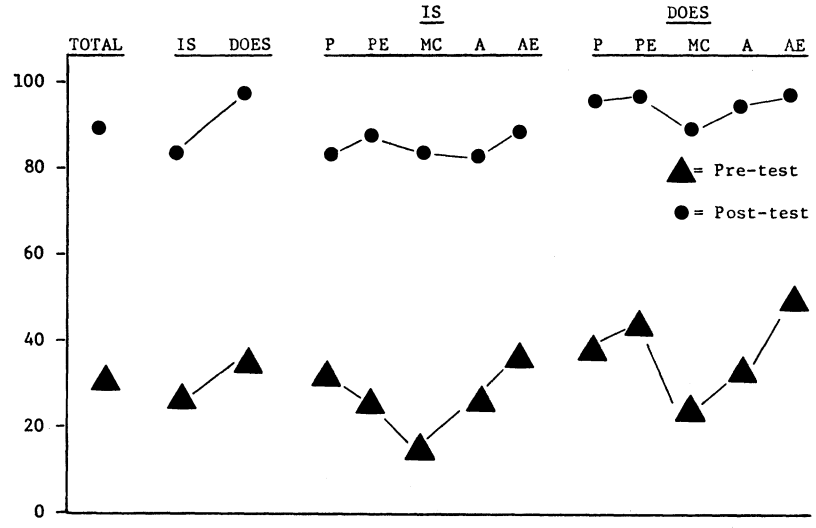

Figure 1. Pre- and post-test means for the experimental group

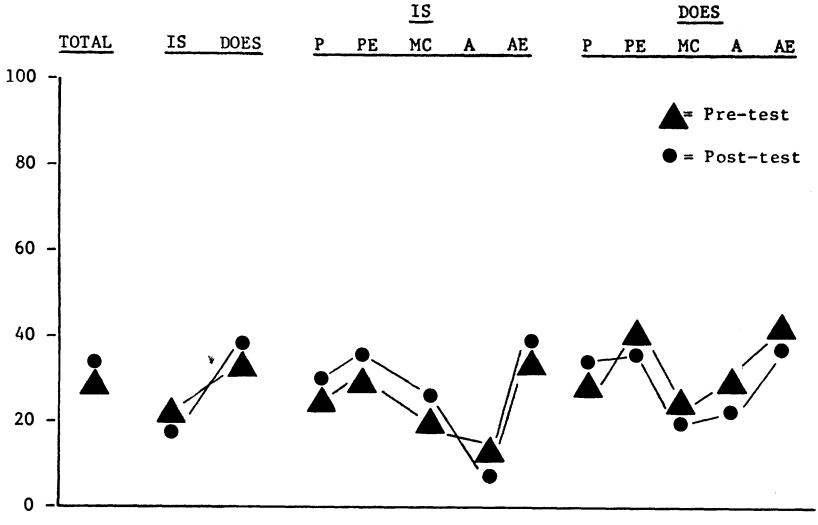

Figure 2. Pre- and post-test means for the control group

the experimental and the control group: the description of the current situation (IS), the description of the intervention (DOES), and the scores for environmental components such as setting (P), stimulus events (PE), responses (MC), contingencies (A), and consequences (AE).

The mean (32.9) of the pre-test score was compared with the mean (88.6) of the post-test score for the experimental group. The difference was significant ($P \leqslant 0.1$).

A similar comparison was made between the means of the pre (34.6) and post (36.8) for the control group. This difference was not significant.

The difference between the post-test means (88.6 and 36.8) between groups was significant beyond the .01 level of confidence.

The pre- and post-assignment results of the experimental and control group were compared by analyses of covariance using the general linear model (computer program: BMD : 10V) and the following results were obtained (All F tests were based on 1 and 19 degrees of freedom):

IS = Description of situation as existed (diagnosis)
- (P) = Overall environmental setting ($F = 99.4$)
- (PE) = Stimulus events ($F = 29.3$)**
- (MC) = Student responses ($F = 221.2$)**
- (A) = Contingencies ($F = 50.5$)**
- (AE) = Consequences ($F = 34.4$)**

DOES = Description of intervention plan (prescription program)
- (P) = Overall environmental setting ($F = 5.1$)*
- (PE) = Stimulus events ($F = 1.5$)
- (MC) = Student responses ($F = 14.4$)**
- (A) = Contingencies ($F = 49.4$)**
- (AE) = Consequences ($F = 0.01$)

The second mode of evaluation was based on teacher and pupil performance. The participating teachers implemented distinct phases for students with problems. Table 1 illustrates the distribution and percentage of successful and unsuccessful trends.

One sample of the academic acceleration project with respect to written spelling words is illustrated by Figure 3.

Table 1 / Distribution and Percentage of Successful and Unsuccessful Projects of Pupil Performance

	Successful Projects		Unsuccessful Projects	
	N	%	*N*	%
Academic acceleration	19	100%	0	0%
Academic deceleration	16	100%	0	0%
Social deceleration	3	100%	0	0%

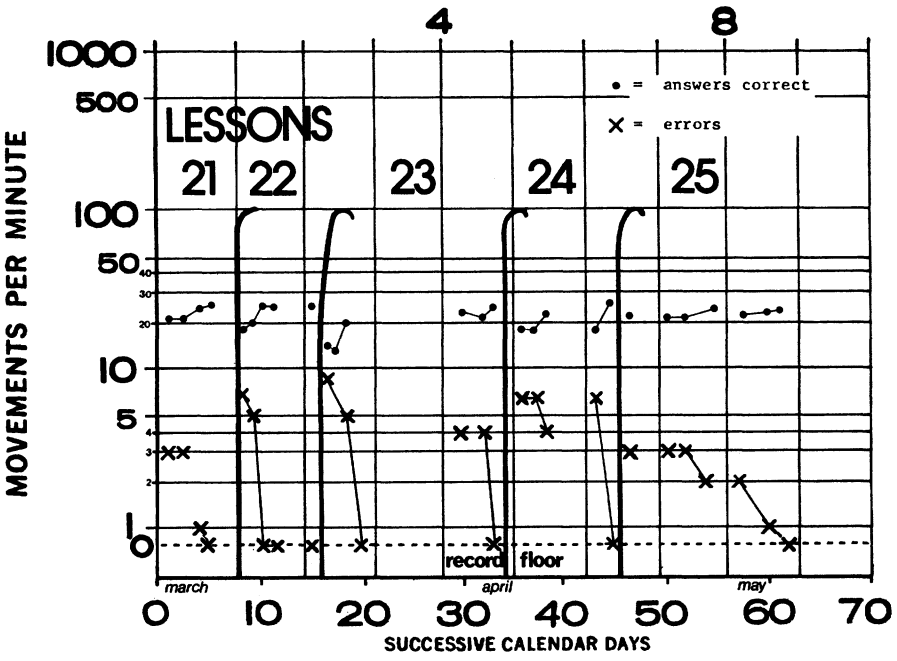

Figure 3. Daily measurement of written spelling words

Each participant was also asked at the completion of the workshop to complete with anonymity an evaluation form which requested comments on the various aspects of the workshop. On a rating scale of 1 to 9 (with one being the highest rating), the evaluations ranged between 1 and 3, (mean = 1.2).

DISCUSSION

According to the results of the comparison between the pre- and post-assignment scores, teachers of the experimental group made a significant gain in the ability to identify and record environmental events and to pinpoint target behaviors and contingencies associated with them. These gains were not made by teachers in the control group. While the pre- and post-assignment required only written discriminations rather than actual classroom performance, the subsequent projects implemented by teachers of the experimental group seemed to indicate that, as the ability increased to make finer verbal discriminations in writing, their classroom performance — that is, carefully planned teaching to increase student performance in terms of targeted behavioral objectives — also seemed to increase. Greater accelerations were noted in the second or third projects than in the first ones.

The pre-workshop assignment also provided information on the specific areas of weakness where teacher performance had to be improved. It indicated which of the specific objectives needed more detailed elaboration to bring teacher performance to an acceptable criterion level.

The pre-test for both experimental and control groups indicated lower scores in the description of the current situation, IS (or diagnostic evaluation of the present learning environment), than in the area of intervention, or DOES section. Out of a possible 100 score for each environmental component, P, PE, MC, A, and AE in the IS area, answers ranged from 16 to 38 for the experimental group and from 22 to 38 for the control group. In careful observation and evaluation of a given learning environment, one may attribute certain weaknesses to the pre-service program. Scores in the DOES area or intervention ranged from 22 to 52 for the experimental and 36 to 48 for the control group. The lowest score occurred for both groups in MC and A. Consequently, the in-service program was designed so that emphasis was placed on environmental components.

The projects carried out by each participant indicated that the skills acquired were implemented. Classroom visits by the investigator permitted careful observation and evaluation of each project, allowing for corrections.

A follow-up post-check, six weeks after the last chart was forwarded to the workshop leader, indicated that all participants of the experimental group continued using the standard behavior chart for improving teacher and student performance.

The teacher evaluation reports spoke clearly of the confidence teachers have gained in their ability to evaluate and alter the academic and social behavior of their students.

Specific comments on the evaluation forms expressed the feeling that participants had learned a meaningful method of teaching children with problems. Participants indicated that they have made gains in the ability to (1) pinpoint behaviors precisely; (2) observe, record, and chart daily performance of academic and social behaviors; (3) make professional decisions based on daily measurement; (4) use probes as daily measures; (5) share data and lesson plans with fellow teachers; and (6) discuss the charts and lesson plans with teacher aides, parents, and peers in the classroom.

The participants stated that they saw the need for reorganization of their own teaching behavior and that the use of direct daily measurement provided an efficient measure of teaching effectiveness.

If increasingly more effort and energy is placed into delivering in-service training to teachers using the short workshop method, then strategies for evaluation of their effectiveness seem mandatory. The present method of evaluation is a tentative first step toward the development of more elaborate models of evaluation.

NOTE

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