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# Improving Inservice Training: The Messages of Research

Bruce Joyce and Beverly Showers

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*To be most effective, training should include theory, demonstration, practice, feedback, and classroom application.*

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We have just completed a two-year effort to examine research on the ability of teachers to acquire teaching skills and strategies.

The first message from that research is very positive: teachers are wonderful learners. Nearly all teachers can acquire new skills that "fine tune" their competence. They can also learn a considerable repertoire of teaching strategies that are new to them.

The second message is more sobering, but still optimistic: in order to improve their skills and learn new approaches to teaching, teachers need certain conditions—conditions that are not common in most inservice settings even when teachers participate in the governance of those settings.

The third message is also encouraging: the research base reveals what conditions help teachers to learn. This information can be used to design staff development activities for classroom personnel.

## Two Purposes of Training

Improving our teaching can be focused on "tuning" our present skills or on learning new (to us)



ways of teaching. When tuning our skills, we try to become more affirmative, involve students more, manage logistics more efficiently, ask more penetrating questions, induce students to be more productive, increase the clarity and vividness of our lectures and illustrations, and understand better the subject matter we teach. In short, we work on our craft. Training oriented toward fine tuning consolidates our competence and is likely to increase our effectiveness.

Mastering new teaching strategies or models and/or learning to put alternative curriculums in place is quite a different goal. To master a new approach we need to explore and understand its rationale, develop the ability to carry out the new strategies, and master fresh content.

Generally speaking, "fine tuning" our existing approaches is easier than mastering and implementing new ones, because the magnitude of change is smaller and less complex. When we change our repertoire, we have to learn to think differently, to behave differently, and to help children adapt to and become comfortable with the new approaches, so mastery of new techniques requires more intensive training than does the fine tuning.

We organized our analysis to find out how various components of training contribute to learning. To do this we developed a typology of "levels of impact" of training and another for categorizing training components. Then we asked the question, "In the body of research on training, how much does each kind of training component appear to contribute to each level of impact?"

### Levels of Impact

Whether we teach ourselves or whether we learn from a training agent, the outcomes of training can be classified into several levels of impact: awareness; the acquisition of concepts or organized knowledge; the learning of principles and skills; and the ability to apply those principles and skills in problem-solving activities.

- *Awareness*—At the awareness level we realize the importance of an area and begin to focus on it. With inductive teaching, for example, the road to competence begins with awareness of the nature of inductive teaching, its probable uses, and how it fits into the curriculum.

- *Concepts and Organized Knowledge*—Concepts provide intellectual control over relevant content. Essential to inductive teaching are knowledge of inductive processes, how learners at various levels of cognitive development respond to inductive teaching, and knowledge about concept formation.

- *Principles and Skills*—Principles and skills are

tools for action. At this level we learn the skills of inductive teaching: how to help students collect data, organize it, and build concepts and test them. We also acquire the skills for adapting to students who display varying levels of ability to think inductively and for teaching them the skills they lack. At this level there is potential for action—we are *aware* of the area, can *think effectively* about it, and possess the *skills* to act.

- *Application and Problem Solving*—Finally, we transfer the concepts, principles, and skills to the classroom. We begin to use the teaching strategy we have learned, integrate it into our style, and combine the strategy with the others in our repertoire.

Only after this fourth level has been reached can we expect impact on the education of children. Awareness alone is an insufficient condition. Organized knowledge that is not backed up by the acquisition of principles and skills and the ability to use them is likely to have little effect.

### Components of Training

Most of the training literature consists of investigations in which training elements are combined in various ways, whether they are directed toward the fine-tuning of styles or the mastery of new approaches. From our analysis, we were able to identify a number of training components that have been studied intensively. Alone and in combination, each of these training components contributes to the impact of a training sequence or activity. (As we shall see, when used together, each has much greater power than when they are used alone.) The major components of training in the studies we reviewed are:

1. Presentation of theory or description of skill or strategy;
2. Modeling or demonstration of skills or models of teaching;
3. Practice in simulated and classroom settings;
4. Structured and open-ended feedback (provision of information about performance);
5. Coaching for application (hands-on, in-classroom assistance with the transfer of skills and strategies to the classroom).

### The Nature of the Literature

We analyzed more than 200 studies in which researchers investigated the effectiveness of various kinds of training methods. Determining levels of impact from single and combined treatments was difficult for several reasons. Most training studies were not designed to measure levels of impact on the incremental value of each training component. Rather,



research questions were generally focused on differences between treatment and comparison groups.

Conclusions nearly always addressed the issue of whether skills were acquired and demonstrated. The question of transfer at the classroom level was addressed in relatively few studies. Nevertheless, we have developed working hypotheses regarding expected levels of impact from the various training strategies. The hypotheses are extrapolations derived from investigations that examined training elements for their impact on teacher behavior. Although the conclusions here are working hypotheses, we believe they adequately represent the present state of the literature and that training programs can use them reliably.

No single study used all training components and measured effects at all levels of impact. However, the training literature taken as a whole provides information on many of the possible combinations. For example, simulated practice has been studied for its impact on skills development (Cruickshank, 1968; Vlcek, 1966). Structured feedback has been compared to open-ended feedback and self-observation (Tuckman, 1969; Saloman and McDonald, 1970).

Studies combining modeling, practice, and feedback (Orme, 1966); presentation, practice, and feedback (Edwards, 1975; Hough, Lohman, and Ober, 1969); presentation, modeling, practice, and feedback (Borg, 1975; Borg, Langer, and Kelly, 1971); and presentation, modeling, and feedback (Friebel and Kallenbach, 1969) have been heavily investigated with respect to skill acquisition and transfer.

Although few studies focused on "coaching to application" as conceived here, several treatments included lengthy follow-up feedback after initial training (and these methods seemed to result in greater transfer at the classroom level). Feldon and Duncan (1978) demonstrated the power of observation, feedback, and goal-setting to boost the effects of training, and Borg, Langer, and Kelley (1971) found permanence of fine-tuning skills in a delayed posttest after an initial training that included presentation, modeling, practice, and feedback.

*Is there a clear demarcation between fine tuning and new repertoire?* Sometimes it was unclear if the focus of the study was fine tuning of existing skills or redirection of teaching style. Frequently, pretraining observations of teaching were omitted from the training study, so the level of entry skills was unknown. However, we have applied several general rules of thumb to distinguish the purposes of training. First, if preservice teachers were the subjects of training, we were more likely to label the training objective "new repertoire" than if inservice teachers were the subjects. Secondly, training aimed at questioning

skills, discussion skills, question wait time, attending to overlooked students, and positive reinforcement of desirable student behavior were generally classified "fine tuning." It seemed reasonable to assume that these behaviors reside in everyone's repertoire, including teachers and teacher trainees. Third, if training involved installation of a new curriculum, instruction in inquiry strategies, or unusual models of teaching that departed radically from the usual recitation classroom process, the purpose of training was assumed to be redirection of teaching style.

*Was there an awareness of the need for addressing the transfer question in the training research?* Apparently, many researchers are aware of the need to assess transfer of learned skills at the classroom level. Recent carefully designed studies examining relationships between student learning and teacher training have carefully monitored teacher behavior in the classroom to assure the implementation of new strategies thought to influence student learning. Furthermore, many studies conclude with the observation that application of skills in the classroom should be the subject of future research.

*What is the power of individual components?* Some components were studied intensively; others were not. We discovered no studies in which presentation alone was the training strategy, but it often appeared as a "control," when it was invariably surpassed by treatments including modeling, practice, or feedback components. Likewise, no studies were reviewed in which practice alone constituted the treatment.

The evidence for modeling and feedback is the clearest. Koran, Snow, and McDonald (1971) demonstrated the efficacy of modeling for redirecting teacher behavior, and Good and Brophy (1974) illustrated the effectiveness of feedback in a powerful one-shot interview based on four months of classroom observation.

*How conflicting were the findings?* The results of training studies are remarkably consistent. Teachers learn the knowledge and concepts they are taught and can generally demonstrate new skills and strategies if provided opportunities for any combination of modeling, practice, or feedback.

*Was the level of impact always discernible?* The absence of fine-grained analyses that examine all levels of impact for individuals in a training program leaves many questions unanswered, for example, the percentage of trainees that achieved each level of impact following training. For the purposes of this review, we assumed that skills had been acquired if teachers were observed to exhibit the trained skills or strategies in peer teaching, microteaching, or classroom settings. If observations occurred several months after completion of training and the trained skills or





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strategies were in evidence, we assumed transfer had been accomplished. Now, what did we find?

### Effectiveness of Components

1. *Presentation of Theory*—The substance of theory components is the rationale, theoretical base, and verbal description of an approach to teaching or a skill or instructional technique. Readings, lectures, films, and discussions are used to describe the approach, its conceptual base and potential uses. In many higher education courses and inservice institutes and workshops, it is not uncommon for presentation of theory to be the major and in some cases the sole component of the training experience. In research it is frequently combined with one or more of the other components.

*Level of impact:* Either for tuning of style or mastery of new approaches, presentation of theory can raise awareness and increase conceptual control of an area to some extent. However, it is for relatively few teachers that it results in skill acquisition or the transfer of skills into the classroom situation (although there are some people who build and transfer skills from theory presentations alone). On the other hand, when the presentation of theory is used in combination with the other training components, it appears to boost conceptual control, skill development, and transfer. It is not powerful enough alone to achieve much impact beyond the awareness level, but when combined with the others, it is an important component.

2. *Modeling or Demonstration*—Modeling involves enactment of the teaching skill or strategy either through a live demonstration with children or adults, or through television, film, or other media. In a given training activity, a strategy or skill can be modeled any number of times. Much of the literature is flawed because only one or two demonstrations

have been made of some quite complex models of teaching, thus comprising relatively weak treatments.

*Level of impact:* Modeling appears to have a considerable effect on awareness and some on knowledge. Demonstration also increases the mastery of theory. We understand better what is illustrated to us. A good many teachers can imitate demonstrated skills fairly readily and a number will transfer them to classroom practice. However, for most teachers modeling alone is unlikely to result in the acquisition and transfer of skills unless it is accompanied by other components. Fairly good levels of impact can be achieved through the use of modeling alone where the tuning of style is involved, but for the mastery of new approaches it, by itself, does not have great power for many teachers. All in all, research appears to indicate that modeling is very likely to be an important component of any training program aimed at acquisition of complex skills and their transfer to the classroom situation.

3. *Practice Under Simulated Conditions*—Practice involves trying out a new skill or strategy. Simulated conditions are usually achieved by carrying out the practice either with peers or with small groups of children under circumstances which do not require management of an entire class or larger group of children at the same time.

*Level of impact:* It is difficult to imagine practice without prior awareness and knowledge; that is, we have to know what it is we are to practice. However, when awareness and knowledge have been achieved, practice is a very efficient way of acquiring skills and strategies whether related to the tuning of style or the mastery of new approaches. Once a relatively high level of skill has been achieved, a sizeable percentage of teachers will begin to transfer the skill into their instructional situations, but this will not be true of all persons by any means, and it is probable that the more complex and unfamiliar the skill or strategy, the lower will be the level of transfer. All in all, research supports common sense with respect to practice under simulated conditions. That is, it is an extremely effective way to develop competence in a wide variety of classroom techniques.

4a. *Structured Feedback*—Structured feedback involves learning a system for observing teaching behavior and providing an opportunity to reflect on teaching by using the system. Feedback can be self-administered, provided by observers, or given by peers and coaches. It can be regular or occasional. It can be combined with other components, which are organized toward the acquisition of specific skills and strategies. That is, it can be directly combined with practice and a practice-feedback—practice-feedback sequence can be developed. Taken alone, feedback can



## SCHOOLS within SCHOOLS

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THE PUBLIC SCHOOL DILEMMA

BY DR. CLEMENT A. SELDIN

Introduction by Dr. Mario D. Fantini,  
Dean of Education, University of Massachusetts

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result in considerable awareness of one's teaching behavior and knowledge about alternatives. With respect to the fine tuning of styles, it has reasonable power for acquisition of skills and their transfer to the classroom situation. For example, if feedback is given about patterns of rewarding and punishing, many teachers will begin to modify the ways they reward and punish children. Similarly, if feedback is provided about the kinds of questions asked in the classroom, many teachers will become more aware of their use of questions and set goals for changes. In general these changes persist as long as feedback continues to be provided and then styles gradually slide back toward their original point. In other words, feedback alone does not appear to provide permanent changes, but regular and consistent feedback is probably necessary if people are to make changes in very many areas of behavior and maintain those changes.

4b. *Open-Ended Feedback*—Unstructured feedback—that is, feedback consisting of an informal discussion following observation—has uneven impact. Some persons appear to profit considerably from it while many do not. It is most likely that unstructured feedback best accomplishes an awareness of teaching style and as such can be very useful in providing "readiness" for more extensive and directed training activities. For example, teachers might begin to ob-

serve one another informally and engage in general discussions about teaching behavior and then proceed toward focused attempts at change. Modeling followed by practice and feedback can be very powerful in achieving skill development and transfer.

5. *Coaching for Application*—When the other training components are used in combination, the levels of impact are considerable for most teachers up through the skill level, whether the object is the tuning of style or the mastery of new approaches to teaching. For example, demonstration of unfamiliar models of teaching or curriculum approaches combined with discussions of theory and followed by practice with structured feedback reach the skill acquisition level of impact with nearly all (probably nine out of ten) teachers at the inservice or preservice levels. If consistent feedback is provided with classroom practice, a good many, but not all, will transfer their skills into the teaching situation. For many others, however, direct coaching on how to apply the new skills and models appears to be necessary. Coaching can be provided by peers (other teachers), supervisors, professors, curriculum consultants, or others thoroughly familiar with the approaches. Coaching for application involves helping teachers analyze the content to be taught and the approach to be taken, and making very specific plans to help the student adapt to the new teaching approach.

### Combinations of Components

For maximum effectiveness of most inservice activities, it appears wisest to include several and perhaps all of the training components we have listed (see, for example; Orme, 1966.) Where the fine tuning of style is the focus, modeling, practice under simulated conditions, and practice in the classroom, combined with feedback, will probably result in considerable changes. Where the mastery of a new approach is the desired outcome, presentations and discussions of theory and coaching to application are probably necessary as well. If the theory of a new approach is well presented, the approach is demonstrated, practice is provided under simulated conditions with careful and consistent feedback, and that practice is followed by application in the classroom with coaching and further feedback, it is likely that the vast majority of teachers will be able to expand their repertoire to the point where they can utilize a wide variety of approaches to teaching and curriculum. If any of these components are left out, the impact of training will be weakened in the sense that fewer numbers of people will progress to the transfer level (which is the only level that has significant meaning for school improvement). The most effective training activities, then, will



be those that combine theory, modeling, practice, feedback, and coaching to application. The knowledge base seems firm enough that we can predict that if those components are in fact combined in inservice programs, we can expect the outcomes to be considerable at all levels.

Future research on training should systematically address the many cells of the training components/levels of impact matrix that currently lack adequate data. An emphasis on the effects of "coaching to application" on "problem solving"—with coaching administered by other teachers, principals, supervisors, and so on—should provide useful information not only on "coaching" as a training strategy but on the relative effectiveness of various training agents as well. If, in fact, coaching by peers proves to boost the magnitude of classroom implementation, an extremely practical and powerful training method can be added to the already tested strategies of theory presentation, modeling, practice, and feedback. *ET*

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# leading civic and moral discussions:

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