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South Brunswick, New Jersey

The Center on Teaching

A Title IVC Project

Analysis of Teacher Perceptions of In-Service Training  
in the Use of the Spectrum of Teaching Styles

An Eight Year Follow-Up Study

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### Program Description

The Center on Teaching is a Title IVC dissemination project designed to train teachers and administrators in a "Spectrum" of alternative teaching styles. The Spectrum styles, seven in number, range from command (with an emphasis on teacher control of factors in the learning environment and predictable student behaviors) to discovery and divergent production.

For each given style, expected teacher behavior and student behavior is prescribed, with the responsibility for various decisions clearly placed. Teachers are trained for various lengths of time in the styles, with follow-up monitoring. Those who received less training were expected to master fewer styles. The program has been in operation for the past eight years, including its developmental stage.

### Previous Research and Research Objectives

Previous research on the effect of the program conducted by Richard C. Anderson of the University of Illinois has demonstrated that, relative to comparison group teachers, teachers trained in the program:

1. exhibit flexibility in the use of alternative styles;
2. give significantly more individual attention to their students;
3. spend significantly less time dominating classroom discussions;
4. make more efficient use of class time;
5. report spending more time in preparation, spending less time giving directions in class, needing less time for discipline problems, getting more subject matter taught, and giving more individualized instruction.

Students in the program demonstrated:

1. increased awareness of their role in decision making and the ability to shift styles;
2. more independence and acceptance of responsibility for decisions;
3. increased clarity of expectations.

In 1979, a research program (see Oxman and Michelli, 1979, 1980) was begun to analyze the impact of the program on student achievement. It was found that fourth grade students (N=61) of project-trained teachers performed significantly better than expected, based upon their previous rate of growth. The perceived effectiveness of the program, as reported by project-trained teachers on a questionnaire, was also investigated. Positive attitudes and enthusiasm among the teachers was noted.

The research begun in 1979 was extended to 1980 to determine whether the mathematics achievement results could be replicated with a somewhat larger group, and whether teachers continued to view the program as effective.

In general, teacher respondents were enthusiastic about the program; 80 percent or more agreed with the positive form of most of the items presented. The more they used a particular style, the more sure they were that all children were able to respond appropriately in that style. In general, the higher the assigned ratings of program fidelity, the more positive the attitudes toward the program. Teachers felt that the program's greatest strengths were in helping them to clarify objectives and expectations, in communicating these to pupils, and in helping them teach children to make decisions and take responsibilities. They also noted the efficiency and better discipline among the children.

Extent of Spectrum Use

Respondents were asked to indicate which of the seven styles they had studied, and the extent to which each of the styles was in use in their classrooms. Table 1 presents their responses.

Table 1  
Extent of Use of Teaching Styles Studied

	<u>Have Studied</u>				<u>Currently Using<sup>+</sup></u>					
	Yes		No		"Pure and Perfectly"		Partially		Not at All	
	N	%	N	%	N	%	N	%	N	%
(A) Command	127	100.0	0	0.0	29	22.8	58	45.7	40	31.5
(B) Practice: Task	127	100.0	0	0.0	31	24.4	68	53.5	28	22.1
(C) Reciprocal	109	85.8	18	14.2	27	24.8	46	42.2	36	33.0
(D) Self-Check	79	62.2	48	37.8	16	20.3	46	58.2	17	21.5
(E) Inclusion (Slanty Rope)	95	74.8	32	25.2	17	17.9	42	44.2	36	37.9
(F) Guided Discovery	80	63.0	47	37.0	6	7.5	44	55.0	30	37.5
(G) Divergent Production	72	56.7	55	43.3	14	19.4	40	55.6	18	25.0

+ Percentages are based upon totals of students who had studied each Spectrum style.

Of the teachers who had studied the Spectrum, more than 60 percent were currently using each of the styles in their classrooms, at least to some extent. Style D (Self-Check), Style B (Practice: Task), and Style G (Divergent Production) were most likely to be in use; these styles, too, were most likely to be used "partially" rather than "pure and perfectly."

Teachers were asked to define "partially." Some respondents defined "partially" as "sometimes," "occasionally," "once a week," or "not daily, but whenever I find subject matter and style are compatible and time is available." Others indicated that they made adjustments and modifications,

using the styles "not strictly according to 'P&P Spectrum' but basically true to style and goal," or that they had modified the style to conform to time schedules and other constraints.

A number of respondents indicated that they used the Spectrum without its special terminology. "Partially means not in Spectrum language." "I no longer tell children we are working in styles." "The terminology is gone but the directions given to students are rooted in Spectrum." "Language is not 'pure and perfect.'" "Communication about the role of the teacher and the role of the learner is not used." "The concepts are implicit but the directions to students are not 'pure and perfect.'" "I have not kept precisely the prescribed verbiage, but have kept the essence of the styles intact."

#### Perceived Helpfulness of Spectrum Experience

Nearly all teacher respondents characterized their experience with the Spectrum as "most helpful--excellent experience" (73, or 57.5%) or as "helpful" (35, or 27.6%), while 12 (9.5%) reported that the experience had been "neutral or mixed," 5 (3.9%) indicated that it was "detrimental--waste of time," and 2 (1.6%) thought it was "most detrimental--caused more harm than good."

The correlation coefficients were obtained to determine the relationship between perceived program helpfulness (characterization of the experience with Spectrum as helpful/excellent vs. detrimental) and use of the various styles, support and conflict, and perceived effectiveness of the Spectrum in terms of reducing discipline problems and increasing achievement, time on task, and individual feedback.

Significant correlations were identified between perceived helpfulness and use of Command ( $r=.29$ ), Practice ( $r=.33$ ), Reciprocal ( $r=.29$ ), and Divergent Production ( $r=.22$ ) styles. The more likely the teacher was to have seen the experience as a helpful, excellent one, the more likely he/she was to use each of the styles.

Perceived helpfulness was also related to the degree of support and/or lack of conflict with colleagues who studied the Spectrum, with principal/supervisor, with students, and with Center on Teaching staff, but not to the degree of support or conflict with colleagues who did not study the Spectrum, as noted in Table 2.

Table 2

Correlations Between Perceived Helpfulness and Support/Conflict

	<u>Support</u>	<u>Conflict</u>
Spectrum colleagues	.57***	-.25**
Non-Spectrum colleagues	.14	-.12
Principal/supervisor	.38***	-.20*
Students	.51***	-.29***
Center on Teaching staff	.46***	-.33***

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

The more support and lack of conflict with one's Spectrum colleagues, principal/supervisor, students, and Center on Teaching staff, the more helpful the experience was regarded. Lack of support or conflict with one's non-Spectrum colleagues, however, did not significantly affect one's perception of helpfulness.

Perceived helpfulness was also closely related to perceived effectiveness, as shown in Table 3.

Table 3

Relationships Between Perceived Helpfulness and Effectiveness

	<u>Style</u>						
	A	B	C	D	E	F	G
Discipline Problems Reduced	.37***	.33***	.29***	.29***	.23**	.19*	.21*
Achievement Increased	.39***	.31***	.35***	.24**	.28**	.23**	.29***
Time on Task Increased	.31***	.31***	.22*	.23**	.17	.05	.28**
Individual Feedback Increased	.34***	.39***	.35***	.32***	.21	.03	.14

\*p < .05

\*\*p < .01

\*\*\*p < .001

The more helpful the experience was perceived to have been, the more likely teachers were to report reduced discipline problems and increased achievement for all styles. Time on task and individual feedback were related to perceived helpfulness for Styles A-D, but not for Styles E (Slanty Rope) and F (Guided Discovery). Style G (Divergent Production) was related to perceived helpfulness except in increasing individual feedback.

Strengths and Weaknesses

In this section, the strengths and weaknesses of Spectrum as a theoretical system and as a training procedure, as reported by respondents, are summarized, as well as teachers' reports of emotional discomfort during training.

Strengths of Spectrum as a theoretical system. Teachers noted that "as a sound, strong theory, the Spectrum both explains and predicts behavior." "It makes me aware of choices," "of what happens in the classroom." "It gives the teacher a greater realization of what he is doing." "It allows reflection," "examination." "It is the only system I have encountered that makes teachers aware--really aware--of what they are doing to and for students. You have to think about what you're doing." "It requires examination of objectives."

"It's very logical and clearcut." It's "systematic," "structured," "realistic," "objective." It forces teachers to make conscious decisions. "It makes the teachers aware of the decisions which must be made." It develops "deliberativeness," teaches "organization."

"It teaches a wide variety of styles." "It encourages teachers to explore different approaches to teaching," "different alternatives," a "broad scope of teaching methodologies for various situations." "It provides many options."

"It gives you a systematic style for planning." "The options give me a good feeling and motivate me to do well." "The Spectrum styles have given me a standard against which I compare my performance as I teach. This is not an entirely conscious process any more."

"It makes you aware of the influence of your vocabulary on students' performance." "It makes teachers aware of how they use language in dealing with kids."

Weaknesses of Spectrum as a theoretical system. Respondents clearly had reflected deeply upon their experiences, and provided insightful comments. "I'm not sure if this is a theoretical weakness, but the most

telling weakness in my opinion is the extensive use of specialized language and attitudes. Being trained in the Spectrum becomes almost a kind of conversion" involving "the belief that it is the only true method of teaching." "You must be totally dedicated." "It's rigid--the teacher must adhere completely to a particular style." "It's not truly a continuum which I believe it should be." It's "too pure"--"too inflexible"--"too organized"--"too confining"--"too formal." "Its formation is in conflict with American culture."

On the other hand, one respondent noted that "the fact that it is theory must be emphasized. Many people get hung up on 'p and p' and were then turned off." In other words, it was not clear to all teachers, particularly in the earlier years, that adjustments and modifications might be made in practice, and that "pure and perfect" episodes were to be studied and practiced for clarity in training.

"It is difficult to keep it (pure and perfect). I have kept up with it but only I might recognize it. To be pure and perfect made me feel too much like a robot." "It's impossible to spend the time needed for p and p lessons."

Many respondents felt that the Spectrum was too much of a change from traditional teaching, necessitating too much extra time and work and causing difficulties between Spectrum and non-Spectrum teachers. "The time necessary for preparation is overwhelming."

One teacher noted that "it's difficult to change old habits; the Spectrum is in direct contrast with many other theories already learned." "There is too radical a difference from non-Spectrum teachers." "It expects teachers to perform in a way that is different from their training

and experience."

Some teachers noted that "the technical jargon tends to alienate people"--"particularly non-Spectrum professionals."

Other comments were: "It doesn't provide for able students to be creative." "I don't see where the styles leave room for developing interpersonal relationships." "It might become mechanical." "One is apt to concentrate too heavily on 'style' rather than subject matter and student. It isn't a complete spectrum of styles." Some teachers found the material "difficult to comprehend" or "too complicated," although one found it "boring." More reference materials and suggested readings were recommended.

Strengths of Spectrum training. Teachers described the training experience as "intense," "interesting," "exciting," and "lively." They described the instructors as "dynamic" (one teacher noted "the 'dynamics' of Muska" as a strength) and "enthusiastic." The instructors were also seen as "thorough," "knowledgeable," "methodical," "experienced," "convincing," "credible," and "available to help."

Aspects of the training situation that were seen as major strengths were the provision for videotaping and feedback, the analysis sheets, the viewer-analyst discussions, and the classroom follow-up and self-checking arrangements. The "on-the-job opportunity to learn about one-self, to control one's own behavior" was seen as invaluable.

Teachers reported that its value lay in its "concentrated period of time devoted to reasoning behind why we teach the way we do." They saw the instructors' "support and encouragement," "positive acceptance and attitudes," and "kindly assistance in a safe environment" as strengths of the training. Some teachers felt that the "dedication" and "emotional

involvement" of the instructors were strengths, while others found it "distracting" or distasteful, referring negatively to "his most exalted high leader."

Weaknesses of Spectrum training\* Most "weaknesses" were not actual weaknesses, but referred to perceptions of insufficient time: "Too much to cover in too short a time." "Not enough time to assimilate so much knowledge." "Too much too fast." "Not enough time." "Not enough videotape time." "Not enough time for observation and feedback." "Sessions were too short." "Not enough time to prepare for videotaping." "Not enough time to practice."

Another weakness frequently noted was the lack of periodic follow-up workshops. "No follow-up after initial period causes one to lapse back into old molds." "Needs reinforcement annually."

Some teachers commented that the introductory sessions were too long, or objected that the "lecture presentation of styles information was rigid and contradicted the tasks." "Subtle pressure was psychologically manipulative." "There is subtle and not-so-subtle pressure to buy into the Spectrum system 'whole hog.'" "Too much time was spent 'downing' current educational practices and higher institutes of learning and defending Project Spectrum." There was "emotional pressure and polarization that seemed to build up among the trainees who 'convert' to Spectrum and those who do not." "Sometimes I felt as if Spectrum was being oversold. That is, truth was not being left to be recognized or to speak for itself." "I found a need to overlook some personality traits (of the instructor's) I didn't like."

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\*Nearly all the negative comments regarding rigidity, lecture-presentation, psychological pressure, and emotional involvement of instructors were made by teachers who had participated more than six years ago.

Emotional reactions to training. Teachers were asked whether or not they encountered emotional discomfort during training. A total of 51 (41.5%) said "yes," and 72 (58.5%) said "no." However, this response was unrelated to any other questionnaire response, yielding no significant correlation coefficients with any indicators of use, perceived usefulness, or perceived effectiveness. The results seemed worth the effort, despite many teachers' feelings of vulnerability. In explanation, teachers noted that "it can be devastating to find out that after years--so much that one did can be done better!"

Teachers noted that there had been "creative tension, yes!" "There was anxiety to do well, but I think that such pressure is acceptable." "It is always an emotional experience when one attempts to change one's behavior." "It was the first time anyone really analyzed my teaching methods against specific criteria." "I went through much self evaluation." "That's the only way to make any emotional growth." "Forced me to reevaluate my role, aspirations, and purposes in teaching." "Normal performance anxiety." "Discarding one's old ways and radically changing one's awareness of the consequences of them is a soul searching and discomforting experience." "It was very painful to admit my shortcomings." "It was ego-deflating--but after completing the training I feel much better about myself."

#### Support and Conflict

In Table 4, the perceived support and encouragement for use of the Spectrum is presented.

Table 4

Support/Encouragement in Spectrum Use

Support Received From:	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
Colleagues who studied Spectrum	42	33.1	36	28.4	31	24.4	10	7.9	8	6.3	3.74	1.18
Colleagues who did not study S.	3	2.4	16	12.6	53	41.7	36	28.4	19	15.0	2.59	.97
Principal/supervisor	32	25.2	37	29.1	35	27.6	13	10.2	10	7.9	3.50	1.20
Students	19	15.0	54	42.5	35	27.6	9	7.1	10	7.9	3.50	1.08
Center on Teaching staff	54	42.5	24	18.9	31	24.4	9	7.1	9	7.1	3.80	1.25

Highest levels of perceived support were reported as coming from colleagues who studied the Spectrum and from Center on Teaching staff. Lowest levels were reported for colleagues who had not studied the Spectrum.

Table 5 presents respondents' perceptions of conflict or discouraged use of the Spectrum.

Table 5

Discouragement/Conflict in Spectrum Use

Conflict With:	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
Colleagues who studied Spectrum	4	3.2	9	7.1	38	29.9	37	29.1	39	30.7	2.23	1.06
Colleagues who did not study S.	9	7.1	27	21.3	43	33.9	29	22.8	19	15.0	2.83	1.14
Principal/supervisor	5	3.9	6	4.7	42	33.1	38	29.9	36	28.4	2.26	1.04
Students	1	0.8	9	7.1	44	34.7	45	35.4	28	22.1	2.29	.92
Center on Teaching staff	2	1.6	6	4.7	45	35.4	27	21.3	47	37.0	2.13	1.02

Comments regarding support and/or conflict with others ranged from positive to negative.

"I truly feel that in our school all were cooperative and supportive."

"Even staff members who didn't elect to study have asked many questions and still seem interested."

"When we started, most of the people were enthusiastic and willing to help one another." "Most colleagues who studied Spectrum were encouraging." "Those involved have used only what is convenient to them." "Because of schedules, colleagues have to talk before or after school and good intentions go by the wayside." "In my school I am the only one who still uses Spectrum. My principal has never encouraged the use of it." "No one seems to be interested in what is occurring in my classroom." "No one mentioned the Spectrum after 1974." "Spectrum melted away, and very little remains." "I haven't been discouraged per se, but lack of encouragement and support is in evidence." "Nobody seems to care...things have gone downhill." "Your center never even came back and requested to see my work." Colleagues are "suspicious," "intimidated," "unwilling to work hard," and "opposed to change." "My supervisor said he'd heard it all before."

When asked about obstacles they encountered when first starting, respondents answered: "No obstacles. It was just a lot of work." "It took too long to make up lesson plans," "to prepare materials." "It required a lot more planning and paper work from me." "It clearly demanded more teacher preparation." "It took more time than was available to plan lessons, to share with others, and to evaluate." "The volume of paper work necessary to get all styles moving (was too great). However, once the initial paper work was done, it could be reused." "More planning, more work!"

Students "were not used to it" and "initially resisted the new

approach." They "bucked at the structure." "Students who were used to 'tuning out' suddenly began demanding to know why I was no longer 'teaching,' that is, lecturing." "Students needed a thorough explanation of each style before they would accept them." "Students humored me."

"I felt insecure, and had trouble understanding and implementing the different styles." "I was too rigid--concentrated too much on getting it pure and perfect." "I had trouble following the language to the letter." The "verbal behavior" was difficult, as was "matching the style to different learning situations."

The few respondents to the question, What might the Center on Teaching have done to alleviate conflict?, offered general suggestions such as "be more available," "produce more material," "provide more practice sessions," "help with initial presentation to students," "develop an extension to help parents," "encourage a buddy system," "follow up the training with in-service workshops," "lengthen practice time," "give more feedback," "push administrators to permit planning time," and "teach Spectrum to the world."

Some teachers requested more structure, such as published materials that contain lesson plans; others suggested "more variation in language so that one is not so stilted." Additional reference and reading materials were also recommended. These comments, however, were general ones, not directed at the idea of reducing conflict. The question was undoubtedly interpreted by many as, What might the Center have done to overcome obstacles?

Respondents indicated whether or not their principal or supervisor had studied the Spectrum. A total of 79 (62.2%) said "yes"; 48 (37.8%)

said "no." Of the respondents whose principal or supervisor had studied, 62 (78.5%) indicated that his/her participation was helpful; 17 (21.5%) said that it was not; 8 (6.3%) said that it had been detrimental.

In explanation, teachers whose principal and/or supervisor studied the Spectrum reported that "he knew what the teachers were going through"; "when my supervisor comes in to observe, she's aware of my styles and can judge me more accurately." "It was helpful when he observed classes. He understood techniques in Spectrum." "Strong support and use of Spectrum by principal added to its effectiveness." "They knew what you were experiencing, and it made observations very worthwhile and easy." "I believe all administrators should take Spectrum training because without it, few can look beyond idiosyncracies and see what real teaching is or isn't taking place. Even with non-Spectrum teachers the administrators can see the actions and be aware of the outcomes."

Many teachers whose principal or supervisor had not studied the Spectrum indicated that they wished that they had done so. "Because they didn't study Spectrum, they couldn't lend emotional support to those staff members who participated." "No leadership--no lasting results." "Principal seems skeptical of the whole project." "I think it would have been helpful."

However, participation by principals or supervisors did not guarantee involvement. A few teachers indicated that their principal or supervisor had studied the Spectrum, but was not helpful. "He was supportive to Spectrum teachers but seemed like the enemy to non-Spectrum teachers," which created conflicts. "The Spectrum appeared too threatening." "Thought it was too phony." "Never completed the course. No commitment to program. They were not interested in making it work." "I have gotten

neither encouragement nor discouragement." "Neutrality or laissez faire would best describe the effect of the principal on me."

### Classroom Effects

How do Spectrum lessons differ from others? Spectrum lessons were seen as "more organized," "more purposeful," "more quiet and orderly," "more time efficient," "more precise," "more specific," "less haphazard." "There is more variety, more student involvement." Lessons are "better planned," "better prepared," and more "thought about." "Objectives are more clearly defined." There is "more willing participation," "more interest," "more challenge." "They are much more complex and involved; however, direction and goal are clearer. They are smoother, quicker, and cleaner."

"You couldn't provide enough room to describe the (positive) change."  
"The difference between night and day."

"Whether I name it a style or not my language is concise, my expectations determined and I am in control." "The class almost runs by itself." "Discipline is easier." "Everything is calmer. When I use the Spectrum, I have better control and higher productivity." "Wherever or whenever I can I use nothing else." "I cover more material and find myself offering more feedback."

A few respondents indicated that there was little or no change ("all my methods are excellent") and a few saw some negative results, in that classes seemed "less spontaneous" with "less personal warmth." "No sense of humor or relaxation." "I don't ask students how they feel about a story they have read, for example, because there is no place in the styles I studied for student opinion on subject matter."

How do/did your students react to the Spectrum when you identify the styles and/or the decisions? The range of student reactions reported was from "students were hostile" to "they loved it." Many teachers, too, indicated that they do not "teach Spectrum," but "teach using Spectrum"; that is, they do not identify the styles to the students. "I never told them about the styles but they know my teaching is different from other teachers." More initial resistance was noted in the junior high and high school grades, which was to be expected since students have had more experience with traditional teaching approaches and have developed firmer expectations of teaching/learning situations. Students who continued to dislike the Spectrum were typically seen as wanting to "ignore fulfilling their responsibilities" or "complaining that it was too much work."

Elementary students "enjoyed making the nine decisions and thought it was special when they did so," were "very interested and willing to try," "more secure," "very attentive," and "enthusiastic."

"They are cooperative and function well." "They handle it beautifully."  
"They like it."

Middle/junior high level students were typically described as having changing and varied reactions. "They bucked in the beginning, but now they see it as a part of the course." "At first they resisted but they have become more comfortable." "At first they were curious, and thought it was a game. Now they like and dislike various styles." They enjoy some styles; "some students find it difficult to conform to the specific behaviors of a style." "They hate A and love B and C." "They enjoy participating in classroom activities when they can make decisions." "They're confused at first, but react positively as they practice." "They seem baffled at first--

some don't want to know their responsibilities."

Some high school teachers indicated that students were more "indifferent." They seemed "noncommittal," "accepting it as any lesson introduced"; had "no particular reaction"; were "mildly interested" or thought it was "OK." These reactions were not reported for younger children. However, many high school teachers reported positive responses from the students. "I did this in two different school systems and in both systems the kids responded enthusiastically and with much interest. They enjoyed it." "They're puzzled at first; then after becoming familiar with them (the styles) they are very comfortable." "They think it's fun." "Almost all didn't like Style A until they found out about its effects when they had to take tests and/or quizzes. Nearly all other styles were readily accepted."

Some high school teachers, though, indicated that "they hated it." "They moaned every time styles were mentioned."

Special education teachers reported that students reacted "positively," "favorably," or "well." "They loved it." They were "enthusiastic and motivated."

Among the 99 teachers using the Spectrum, 42 (42.7%) indicated that students ask for particular styles, for many different reasons. It should be remembered, however, that all teachers did not study all the styles. Elementary level teachers reported C as the students' favorite, although all styles except F were requested.

They said that students ask for "B and G especially but all styles at various times. B because they especially love to make location decisions. They know that feedback is coming. G because they enjoy Style C activities."

"B, C and D; they enjoy having the decisions shifted to them. They frequently request certain styles and they are not inhibited about expressing their opinions." "A, B, C, E; they seem to come more naturally." "C and D for the instant correction." "B and C because they have input." "C for the chance to work together as teams." "C, D, and B." "C and G." "C; they like the reciprocal roles." "B." "A and B; they seem to enjoy the specific guidelines." "C and G; they like the lack of structure as they see it."

Similar requests were made by middle school pupils, with C the most popular, B a close second, and all styles requested. Students asked for "B, because they like to choose their own location; C, because they enjoyed working on a one-to-one basis, and grades improved." "A and B; they feel they can learn more. They also enjoy it when I assume total command." "C; they like the reciprocal roles and participating nature of C."

High school teachers reported that Style F was the most popular, with B and G also requested by many students. Style A was not requested by students of responding high school teachers, who noted "B and G; it's a natural order to acquire information, then use it." "B, F, and G, because they like them." "E and F, because of varied ability levels and motivational differences." "There are certain styles that they feel are more 'fun,' such as reciprocal (C) or Style D." "C and F; there is room for individual support of different work patterns." "In advanced courses, F and G are requested; D in chemistry, and B in general courses."

Special education teachers reported C as the most often requested, with B as the next most popular. They like "B and C because it gives them freedom to make decisions," "C and D because they like to work together,"

and "C to have partners and answers." "C; since they are quite small, they felt important to be helping." "They ask for decisions, like choosing location. They remind me if I forget a step, like ringing a bell in Style A."

Teachers were asked to assess the effects of Spectrum use in four areas: reduced discipline problems, increased achievement, time on task, and individual feedback. The number of respondents reporting each positive effect, relative to the number who had studied each style, are reported in Table 6.

Table 6  
Perceived Effects of Spectrum Use

Style	No. Studied	Discipline		Achievement		Time on Task		Ind. Feedback	
		N	%	N	%	N	%	N	%
A	127	70	55.1	64	50.4	56	44.1	35	27.6
B	127	63	49.6	51	40.2	60	47.2	55	43.3
C	109	42	38.5	37	33.9	47	43.1	51	46.8
D	79	34	43.0	33	76.7	32	40.5	38	48.1
E	95	30	31.6	22	23.2	28	29.5	30	31.6
F	80	16	20.0	21	26.3	15	18.8	21	26.3
G	72	18	25.0	56	77.8	17	23.6	20	27.8

According to respondents, Styles A, B and D were most effective in reducing discipline problems; B, A and C in increasing time on task; and D, C and B in increasing individual feedback. Achievement was seen as increasing by the largest proportion of teachers by using Styles G, D and A.

Teachers who were not using Spectrum to the fullest often indicated that

lack of time for preparation of materials prevented its use and, for some, lack of sufficient training and/or follow-up and support from administrators. "I feel limited in knowing only A and B and some of G. I would like more variety to choose from." "It came to a point where I needed help and there was no one to turn to. I felt betrayed!" Some teachers said they didn't use it fully because it was "not used consistently throughout the school," and some indicated that certain styles did not lend themselves to particular subject areas, so those styles were not used. Some others, particularly those who studied some time ago, stated: "I cannot adapt it to my personality. It was much too serious and rigid." "Don't agree with it. My methods are less formal." "Spectrum is too pure." "I was uncomfortable with the structure."

"I simply don't have the time to work the styles into all the various areas of subject matter covered in English, so I retained some of the techniques and lost the 'pure and perfect.'" "Using it to the fullest is extremely demanding because of the necessity to perform each style perfectly." "The regimentation is too much."

Teachers who indicated that they have continued to use the Spectrum explained that they do so for the reasons cited earlier, or "because it works." "I know I'm doing a better job." "After studying the Spectrum and implementing it, I would find it impossible not to use! The value of the Spectrum is incredible. I would never revert to former verbal behavior." "It saves so much time--I never have enough..." "There is no need to continue to walk in the desert once you have found the ocean." "It has its merits; I think it should be used as teacher training in all colleges and universities." "It gives me a universal method to approach learning and

the preparation of my lessons." "Spectrum lends itself to an inquiry approach." "I find guided discovery very useful in the teaching of math. Student response is excellent." "Where I have incorporated it, it fits my curriculum (science) beautifully." "When I encounter problems I look to the Spectrum." "Because it works! Because I like it. Because the kids like it. Because it produces good results!" "I feel more organized. My expectations are clearer to the students and their work and attitude is more productive." "It resolved the teaching questions I still had after a few years of teaching. I feel secure with it. I enjoy it."

Respondents were asked to indicate how the use of the Spectrum has changed over time since training. Most indicated that they use it more as they have become more comfortable with it, that it has become internalized. "I have more material accumulated and use it more."

Most respondents indicated that they do not strive for "P and P" but use the style to the best advantage. "I've made it more adaptable." "It has relaxed; I am not so concerned with the introductory verbiage." "I have modified it." "It has become a part of my classroom attitude. If a lesson shows a need for a certain style, I improvise my own use of that style." "I have salvaged and tailored it to fit me." "It's less pure but the general idea is there." "The methods have 'blended in' with other methodology." "I've changed the pure styles to suit my beliefs and personality."

"It's hard to explain, but you tend to work several episodes into your lessons and come up with all kinds of combinations. The important thing is that you're always thinking about what style or styles will get what you want across to the kids."

In response to the question, If you were to tell someone--in a few words--what the Spectrum is about, what would you say?, their answers included: "Spectrum is about teacher behavior in relationship to a divergent system of styles which are clear to both students and others." "It's a systematic breakdown of teaching styles." "It's an analysis of teaching, of what is going on (besides subject matter) in a lesson." "It's an organized way of looking at teaching methods." "It is an organized way of planning"; it "matches teaching behaviors with objectives." "It makes a science out of teaching," instructing "how to choose teaching behaviors in order to elicit specific pupil behaviors."

"It's a logical way of determining who makes what decisions during the teaching/learning process," making teaching "a deliberate activity instead of chance." "It clarifies intentions and expectations." "It identifies the roles and responsibilities of people involved in a learning situation." "It provides a means for organizing a classroom so that students are involved in decision making and are accountable for the decisions they've made." "Children make more decisions and can therefore develop responsibility." "It's a way to manage a class."

Teachers responding to the question, What qualities/characteristics do you think teachers have, who have studied and who implement the Spectrum as compared with those who did/do not?, describe Spectrum teachers as more willing "to be vulnerable," "to learn," "to improve," "to innovate," "to explore," "to grow," "to change." They were seen as more "trusting," "outgoing," "open," "creative," and "assertive."

As compared with Spectrum teachers, non-Spectrum teachers were described as "inflexible," "uncreative," "complacent," "in a rut," and

"set in their ways." They're either "self-satisfied 'super-teachers' or afraid to change." "They cannot accept change." They're "very threatened," "scared," "afraid," "suspicious," and "not willing to 'risk.'"

They have "limited vision"; they "always miss something. They're unintentionally insensitive to many things." "They lack the desire to make an effort" and are "not willing to spend the time needed."

Of course, many respondents refused to make broad generalizations about teachers in general, noting that many non-Spectrum teachers were very effective and the decision not to participate did not mean that they were limited, fearful, or insensitive.

Comments added by teachers to help in assessing the program were mainly statements which reported perceived effectiveness (such as "it is the most positive learning experience I have had as a teacher") and/or requests for updated Spectrum information and review, or recommendations for maximizing program success.

Among the statements of effectiveness were: "I feel Spectrum training at the end of my first (and disastrous) year of teaching did the most to turn me around to become a better teacher. I don't feel my college training did as much to teach me about teaching as Spectrum did." "As I view the other 'popular' models related to teaching behavior, I don't think they hold a candle to Spectrum. I am very grateful for having had the opportunity to train and use Spectrum." "Spectrum penetrates your life--not just your classroom.... I loved the Spectrum." "The Spectrum is super." "It is probably the best thing to ever happen to education." "Spectrum has had a most definite, positive influence on me."

"Where have you been?" Many teachers stated that they would appreciate

periodic refresher or review workshops, "checkups" by instructors on their progress, or some other type of follow-up. "A yearly brushup or update through newsletters of thoughts and ideas from other professionals who have gone through training" would be helpful. "Have monthly meetings." Many respondents used the questionnaire to request information ("please let me know when your new book is off the press") or asked questions about changes in the styles. "If there are any additions or modifications, please forward them." Extended training was also requested by teachers who had studied only a few of the styles.

A number of respondents suggested that Spectrum training be offered on the undergraduate, pre-service level. "Spectrum skills training would be useful at the college level."

Some teachers emphasized the need for administrative support. "Unfortunately, Spectrum is very difficult to implement in a school and/or system unfamiliar with its techniques and theories. Slowly, the techniques are eroded by the demands and climate of a new school. Support is essential...without monitoring and frequent consultation with Spectrum colleagues, however, it is very difficult to practice and perpetuate Spectrum teaching." "This year, the use of the Spectrum went well because of the help, observations and support of my principal, who took the Spectrum for administration during the summer. Last year I was the only one in the school--trying and floundering to use the Spectrum, and the general consensus was that it was another of my crazy ideas, or foolish enthusiasm."

On the other hand, another teacher reported, "I have had the opportunity to use Spectrum in a school where I am the only teacher using it. Students have loved using it. Parents want to know my secret for getting kids to

like math. And my supervisor wants to know where I learned all this and what it's all about."

### Summary

The Center on Teaching is a Title IVC dissemination project designed to train teachers and administrators in a "Spectrum" of alternative teaching styles. The Spectrum styles, seven in number, range from command (with an emphasis on teacher control of factors in the learning environment and predictable student behaviors) to discovery and divergent production.

For each given style, expected teacher behavior and student behavior is prescribed, with the responsibility for various decisions clearly placed. Teachers are trained for various lengths of time in the styles, with follow-up monitoring. Those who received less training were expected to master fewer styles. The program has been in operation for the past eight years, including its developmental stage.

An extensive follow-up survey of all trained teachers was designed to elicit perceptions of program effectiveness and its maintenance over time. This report presents the analysis of the responses of 127 teachers who had been trained in the Spectrum of teaching styles over the eight year period.

Of the teachers who had studied the Spectrum, more than 60 percent were currently using each of the styles in their classrooms, at least to some extent.

Nearly all teacher-respondents characterized this experience with the Spectrum as "most helpful - excellent experience" or as "helpful," and as effective in reducing discipline problems and increasing achievement, time on task, and individual feedback to students.

Teachers reported their perceptions of the strengths and weaknesses of the Spectrum as a theoretical system and as a set of training procedures. They noted that the Spectrum encourages "reflection" and "forces teachers to make conscious decisions," and that "the concentrated period of time devoted to reasoning behind why we teach the way we do" was particularly valuable in training. The extra time required for preparation for teaching, however, was seen as excessive by some, and some respondents felt that the Spectrum training had been "too much to cover in too short a time." When asked about obstacles to implementation, responses included "no obstacles; it was just a lot of work."

Spectrum lessons differ from others in that they are "more purposeful, more precise," and "better planned." Although they are "much more complex and involved, they are clearer...smoother." "The Spectrum's focus on the role and responsibilities of persons involved in a learning situation" helps to "clarify intentions and expectations."

Recommendations were made for periodic "refresher" courses or some other follow-up procedures. In general, most participants agreed with one teacher's assessment that the Spectrum "works."

### Discussion

H. L. Mencken is credited with saying that "for every problem there is a solution that is quick, easy, and wrong." One of the most persistent problems in American education is the search for faculty development programs that cause a meaningful change in participants leading to increased teacher effectiveness as measured by student achievement. We have many "quick, easy, and wrong" solutions. Most efforts to develop faculty

in-service programs are constrained by a very limited amount of time available for instruction, by a desire to package instruction in such a way as to minimize threat to participants, and by other factors derived from contractual agreements and/or limited resources.

Certainly, in contrast with typical local in-service efforts, the Spectrum program of the Center on Teaching is neither quick nor easy. Throughout this report we have seen evidence that teachers see Spectrum training as challenging and, in many cases, what they learned as part of Spectrum training made their day-to-day teaching tasks more demanding in that more time was spent in planning and more precision was sought.

In education, as in most fields of endeavor, the question of right or wrong does not lend itself to easy answers. Districts must select the approach to staff development that is right for the setting. However, in the present context of accountability, it would seem that any staff development approach that cannot demonstrate change in teacher behavior (at least as perceived by the teachers) and some evidence of pupil growth would have to be considered "wrong."

It is our view that, while the Center on Teaching approach may not be right for all districts, any district which is serious about staff development and recognizes that there are no quick and easy solutions should consider the evidence presented in this and other reports on the approach. This is especially true in light of evidence presented on:

1. student achievement,
2. perceived reduction in discipline problems, and
3. perceived increase in time on task behavior.

Among the more interesting findings presented in this report (interesting

because of implications for judging the effectiveness of the Spectrum or because of implications for further study) are the following:

1. A large proportion of respondents (60%) reported using each of the styles studied, with Styles D, B and G most likely to be used. Assuming that this is accurate, Spectrum training has succeeded in moving teachers to use alternative teaching strategies. These three strategies--with their emphasis on practice of specific tasks (B), seeking early feedback on success (D), and creative thinking (G)--represent significant changes away from less interactive, teacher-dominant styles which seem to permeate American schools.

2. Teachers generally reported that they were more likely to use the Spectrum partially than "purely and perfectly." To the extent that this means that teachers adapted rather than adopted the program, these are implications for training. Trainers report that they were less concerned about pure and perfect adoption in the later years of training than in the early years. While research on change supports a strategy permitting adaptation so there is a sense of "ownership" on the part of adopters, guidelines should be set to identify permissible adaptations that maintain program integrity. It seems that partial adaptation for many respondents meant use of the Spectrum part of the time or changes in language rather than changes in essential ideas, and so integrity seems to have been maintained. This issue should be dealt with directly in future training. Such an approach might mitigate against the concern for rigidity expressed by some respondents, who had been early participants, as a theoretical weakness.

3. It was reported that 62.2% of the respondents had principals or supervisors who had studied the Spectrum. This seems to be a rather large

proportion, and the fact that so many principals and supervisors participated speaks well for the attractiveness of the ideas. It is not surprising that a large proportion (78.5%) whose principal or supervisor had studied thought his/her participation was useful. A particularly intriguing development occurred in the instance cited of the principal who supported Spectrum teachers but seemed to treat others as "the enemy." With such a high proportion of enrolled supervisors, sensitivity to the danger of developing two camps of teachers, the "ins" and "outs," should be developed with participating supervisors.

4. Teachers reported perceived support from 57.5% of the students involved, while they felt conflict in only 7.9% of the cases. The image of students being so involved in the process that they requested specific styles, reported by 42.7% of the teachers, is worth exploring further. There is much in the literature about resistance to change among teachers, but almost nothing that reports on the receptivity of students to innovation. Our view is that a successful innovation must change the role and behavior of the teacher and the students. We have a hint here that this happened with the Spectrum experiments, and the changes in student achievement reported earlier support that hint. It is not surprising that students would be accepting of a program which shifts some decisions to them, nor is it surprising that there would be more resistance to any change among older students than among younger ones. Future studies that focus as much on degree of implementation by students as by teachers are indicated.

5. A number of respondents saw as the greatest value in the Spectrum its role in helping them to think about and plan for teaching more precisely. Some saw the increased time required for planning as a negative factor.

Supervisors have been trying for years to convince teachers of the benefits of planning. One of the greatest potential values of the Spectrum may well be its utility as a conceptual model for helping teachers think about teaching. It is indeed unusual for teachers to see the value of more planning and reflection, and then describe the experience as "interesting, exciting, and lively."

6. The need for additional follow-up was a frequent concern of respondents. Certainly continuing support and feedback is critical for a program seeking major behavioral change among participants. If it is not possible for the trainers to provide enough support, then support groups might be structured among teachers in the same school or system, or even across systems.

In conclusion, the Spectrum program of the Center on Teaching appears to be an unusually successful approach to staff development. It is important for districts to recognize at the outset that the approach is anything but "quick and easy." However, for many districts, it may be "right."