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Teacher Education and Special Education

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TEACHER EDUCATION AND SPECIAL EDUCATION

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Education in any society tends to reflect the political philosophy of that society. In a democracy where the state is believed to exist for the welfare of the individual, education is organized to achieve that end. The concept that "all men are created equal" has important meaning in a democractic society. In the United States it was intended to mean equality before the law, but it has also been interpreted to mean equality of opportunity. That concept implies educational opportunity for all children. It implies the right of each child to receive an education to the limits of his or her capacity, whether that capacity be great or small.

Recent court decisions have confirmed the right of all children to an appropriate education. Public schools have been mandated to provide that education to all children, including handicapped children. Those legal decisions are consistent with a democratic philosophy that all children must be given the opportunity to learn.

In order to meet the mandate, American schools have

evolved numerous modifications of regular school programs to adapt instruction to handicapped children who cannot profit substantially from the regular program. Those modified programs have been designated as programs for exceptional children, whether gifted, mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired and/or learning disabled.

Historically, educational and social services for the handicapped have been inconsistent and in most cases, discriminatory. According to Kirk and Gallagher (1983) in the early years of the Republic there were no provisionns for the handicapped. Such individuals were either "hidden away" at home or "sent away" to asylums or other institutions with no educational provisions in either case.

Beginning in 1817 many states established residential "schools" for the deaf, the blind, the mentally retarded, the orphaned, and others. These institutions were centralized centers which offered some training but were mainly protective environments - for the handicapped from society, and for society from the handicapped. Often they were placements for life.

Institutionalization was prevalent until the twentieth century when the philosophy of educating the handicapped began to change. With the change in attitude, handicapped children remained in their communities and were educated there. Special classes in public schools were established. The first classes were created for the deaf, mentally retarded, crippled and blind. Since 1900 special special classes were organized in most public schools throughout the United States, yet educational services were still inconsistent and discriminatory.

From 1950 to 1980 there was an explosion of provisions for the handicapped. The concepts of nondiscrimination and appropriate educational services began to emerge. Many individuals, organizations, and advocacy groups combined their efforts to assure the rights of the handicapped for more and better educational and social services. This expansion was brought about by litigation, state and federal legislation, and appropriations.

According to Hardman, Egan, and Landau (1981) the 1970s were the era for affirmation of the civil rights for the handicapped. In 1970 the Bureau for the Handicapped (BEH) estimated that approximately 62 percent of all school-age

handicapped children were not receiving appropriate educational services. As a result of these findings, a decade of litigation was begun. A number of civil cases prepared the groundwork for fundamental changes in the education of the handicapped.

Two public laws were enacted that exemplified the new direction in public policy for the handicapped. The laws were: (1) Section 504 of the Vocational Rehabilitation Act (U.S. Congress, 1973); and (2) The Education of All Handicapped Children Act: Public Law 94-142 (U.S. Congress, 1975). Section 504 made it unlawful to discriminate against the handicapped on employment, housing, access to facilities, and public education. The Education of All Handicapped Children Act specified the provisions of a free, appropriate, public education. These provisions included educating handicapped and non-handicapped children together to the maximun extent possible; providing appropriate and continuous diagnosis and evaluation in a nondiscriminatory way; and due process.

Public Law 94-142 had a profound effect on America's public education system. All levels of public education were affected, from the state agency to each individual

handicapped student.

To carry out the provisions of the law (Kirk and Gallagher, 1986), the federal government authorized the spending of up to $3 billion by 1982, promising much larger sums of money to aid the states than had previously been provided. (By 1985, the government had actually spent about $1 billion a year.) In return for that aid, states were required to show evidence that they were doing their best to help children with handicaps receive needed services.

States and school districts had to comply with every provisions of the law in order to receive additional funding for educating the handicapped. The federal government must be assured that every effort was being made to serve all handicapped children. Proof must be given that non-biased assessment procedures were being used to screen and identify students as handiapped. Also assurances must be given that all students identified as handicapped were placed in educational settings that were the most suitable for their educational and social needs, for each student must be educated in the least restrictive environment. Each student placed in a special education program must have an individualized education program (IEP) which was a written

statement that included an evaluation of strengths and weaknesses, current levels of educational functioning, and a statement of long-range goals.

Each local educational agency must provide an annual review of each student's progress and placement. Also each state agency and local school districts must assure the federal governmennt that procedural safeguards were enacted to protect the right of both handicapped children and their parents.

Congress knew that many professionals would be ill-equipped to deal effectively with all or many of the provisions of the law. As a result, monies were provided for training of teachers and administrators and, therefore, each state agency was required to submit a plan for personnel development. These plans were to identify the steps that would be taken to provide teachers, support personnel, and administrators with appropriate skills to educate the handicapped in a variety of educational settings. A comprehensive system of personnel development was mandated by law.

There had been marked growth and expansion of special education training programs since 1950 (Schofer, 1978). This

growth had been uneven and unplanned, resulting in surpluses in some areas and in unnecessary duplication of training efforts in others. After 1975, an estimated additional 250,000 personnel were needed to serve the seven to eight million exceptional children
who needed services. To provide the training for this number of special educators efficiently, in addition to addressing the other personnel problems within special education, much planning was needed. So in the early stages of development, the Cooperativve Manpower Planning in Special Education was organized.

Public Law 94-142 required that training/comprehensive personnel development should be tailored to the needs of those who were serving and to serve the handicapped. This included present and future teachers. Therefore, opportunities for in-service and preservice training had to be considered. State education agencies (SEA), local education agencies (LEA) and colleges and universities that were involved in training of special education personnel had the opportunity to participate in the development of the plan.

The involvement of representatives of SEAs, LEAs,

colleges and universities, and concerned "others" provided a "clearinghouse" where personnel development problems such as surpluses and/or shortages of trained personnel, duplication of training programs and projections of future needs were considered along with the implementation of appropriate in-service training programs.

Prothro (1978) described the use of a statewide participatory planning group with field-based task forces for assistance in planning, developing, and implementing the Comprehensive System of Personnel Development (CSPD). In the summer of 1974, a 17-member council representing Texas institutions of higher education (IHE), the SEA, LEAs, and organizations for the handicapped was formed to advise and provide technical assistance in the development of the plan that would result in the most appropriate use of resources for the support of personnel. The Council relied heavily on field-based task forces for input. With in-service training having the greatest amount of attention, the Council assisted the state in conducting annual in-service training needs assessmentt. The Council developed and recommended a cooperative in-service training network of local and intermediate education units, education service centers and

institutions of higher education that would provide in-service programs.

It also produced, by using the field-based and participatory approach, new certification requirements for elementary and secondary teachers relating to the education of the handicapped. The Council assisted in the dissemination of materials and training of university personnel through scheduled conferences.

The Project on Cooperative Manpower Planning in Special Education, University of Missouri (Schofer, 1978) conducted a survey in 1976 to determine the status of cooperative planning in each state. A second nationwide status study was conducted in 1978 to determine the changes which had resulted in those states which had participated in the first study, and the reactions and compliance to the Personnel Development Section of PL 94-142. The results of that study gave an overview of what happened in cooperative manpower planning throughout the nation at that time.

Of the 53 responding states and territorities, 42 reported that they had current, on-going state manpower planning committees for special education. Most of those committees (67%) were described as primarily advisory groups

with little or no authority. In addition to data collection, other major concerns that the committees addressed included: in-service training programs, organization of the committee, revisions of certification standards, needs assessment, and input to the Annual Program Plan.

Gilles (1980) reported that despite the evident need for preservice and in-service personnel preparation, several factors combined to impede the development of the Comprehensive System for Personnel Development (CSPD) in many states. These barriers included operational problems, lack of explicit policies regarding the CSPD scope, and complexity of the Comprehensive Plan.

There were several basic components of a CSPD which determined the type of system that was incorporated. The scope, structure, and functions varied because of the many unique characteristics of each state. The components included:

1. Availability and adequate of information on preservice and inservice training needs and resources (needs assessment and dissemination), extent of use of information for planning and decision.

2. Extent of cooperation, including the levels of participation, trust, commitment, and cooperation of the individuals, organizations, and agencies in developing and implementing plan.

3. Levels of support for Comprehensive System development. This includes political and fiscal support and technical assistance.

4. Size of state and population densiity.

5. Availability of training resources, such as for preservice and inservice training in IHEs and various private agencies, the time for participation, and the funds for planning and implementing training.

6. Fiscal climate, both constraints and trends.

7. Current and projected school enrollments and prevalence of children with special needs.

8. Current and projected special education personnel supply and demand; personnel classification and certification; and elasiticity of manpower market (ease of changing role).

9. Legislation,, judicial decisions, and regulations.

10. Level of political complexity, including the number and types of organization, agencies, and other constituencies to be involved in cooperative planning and the nature of their interaction.

11. Federal, state, and local policy.

In study (Gilles, 1980) of two manpower planning projects, the Massachusetts Project and the Northeast Region Project, several factors were shown to contribute to successful implementation:

1. increased understanding of CSPD scope, functions, and implementation options;

2. active participation in planning and program development by a broad range of constituencies;

3. clarification of roles and relationships of the SEA and other agencies, institutions, and organizations;

4. primary emphasis on communication, coordination, cooperation, and technical assistance rather than compliance;

5. availability of an adequate information base for planning; and

6. sufficient support, i.e., policy, funds, other training resources, and time for short-and long-range planning, program development, and implementation.

Maher (1982) described and reported some empirical evidence about a Personnel Preparation Team Approach for planning and evaluating personnel preparation in public school districts. The primary goals of the Team were:

1. to identify and assess the personnel preparation needs of public school staff;

2. to design a personnel preparation plan, consisting of a range of education and training programs that addresseed the identified needs; and

3. to evaluate the implementation and outcome of the plan.

The Team consisted of a multidisciplinary group of teachers, related service providers, and administrators, with

a Team being organized at either a school or school district level. Each Team consisted of five members who were trained in program planning and evaluation by means of five 2-hour workshops.

A six-step planning and evaluation process guided the Personnel Preparation Team. The steps were: needs assessment, plan development, plan implementation, plan evaluation, evaluation of team operations, and plan revision.

Two New Jersey public school districts were involved in the evaluation that was conducted during an entire school year. Both districts were classified by the State Department of Education as urban-suburban districts of approximately 10,000 pupils in K-12 with approximately the same number of regular and special education staff. The evaluation compared the efficacy of the Personnel Preparation Team Approach to a Personnel Preparation Committee that did not use the Team Approach process.

Teachers in the Team Approach schools were more aware of CSPD and felt more involved in the process. The Team included 22 different kinds of personnel preparation programs in the Plan, while the Committee had five. All 22 programs were implemented and evaluated by an outside rater. None of

the five programs of the Committee Approach was evaluated as to implementation or outcome as determined by the outside rater.

This study could be viewed as an initial attempt to assess the utility of the Personnel Preparation Team Approach as one means of improving the personnel development capability of public schools.

IN-SERVICE EDUCATION

In-service training and/or staff development increased in terms of importance in light of federal laws and litigation procedures. In-service training (Vance, 1979) became an even more important avenue in light of new staff development monies and the need to retrain special teachers and offer support for regular classroom teachers.

The Comprehensive System of Personnel Development plan incorporated both in-service and preservice teacher training, but the need for appropriate in-service training programs was critical. It was not reasonable to expect that university training programs could, in a reasonable period of time, train enough teachers to meet the needs of public schools. Each year only a small percentage of qualified teachers returned to the university for the necessary re-training. At the same time, the relatively small number of students in teacher-training programs in special education could hardly be expected to meet the increased demands for such teachers. It was recognized that if programs for children with

handicaps were to be developed appropriately, a considerable amount of in-service training would have to take place at the local school level. (In-service activities were not intended to replace the need to prepare personnel in degree granting programs rather they were developmental learning experiences for professionals.)

There are a number of characteristics that set in-service education apart from preservice education. Brinkerhoff (1980) described several key differences. These are listed in Table 1.

Table 1. Some comparisons of inservice and preservice education

Inservice	Preservice
Short-term, relatively brief "treatment" time devoted to intended outcomes	Long-term, with considerable "treatment" time devoted to intended outcomes
Minor resources; teacher education peripheral to the institution's function	Major resources; teacher education central function to institution
Objectives often represent minor shifts in knowledge or skill; unclear and varied expectation for range of effects	Objectives represent major shifts in knowledge or skill; more clear definition and uniform expectation for range of effects
Conducted in septic environment with little control over intervening variables	Conducted in more antiseptic environment, with more control over outcome variables affecting learning
Instructional content must be needs based, and public is referent for accountability	Instructional content more free to be model/theory based; accountability referent less clear; tradition of "academic freedom"
Instructional design selected/fabricated to "fit" a fixed recipient population	Recipients can be selected to "fit" a given instructional design

In-service is considered to be any training other than that received by an individual in a full-time degree program. This would include the traditional workshops, conferences, and other short-term training efforts. Also included is training at an institution of higher education of a student who is in a degree program but not attending on a full-time basis (Intrilligator and Saettler, 1978).

Meeting the commitments of the mandates of PL 94-142 necessitated the development of new sets of skills for educational leaders who were asked to deliver services to an expanded clientele. Programs were developed to serve particular types of trainees. Foremost in need of training were special educators, followed by the regular classroom teachers. University personnel, in particular college faculty who had to learn skills associated with becoming "trainers of trainers," as well as integrating special education concepts into their course offerings were also given top priority. Paraprofessionals were trained to facilitate their performance as teacher aides, parents advocates, and child advocates. Physicans, school psychologists, therapists, and recreation personnel were

in-serviced in order to apply their particular expertise to the classroom setting to enhance the learning of handicapped students. School system administrators and state education agency staff also were in-serviced in order to perform more effectively with the implementation of the law.

Obviously, in-service training was one of the main facets of personnel development. Specific details were outlined as to how in-service training was to be developed. PL 94-142 had a basic component which required each state educational agency to submit an annual program plan which described programs and procedures for the development and implementation of a Comprehensive System of Personnel Development. That description (Intrilligator aand Saettler, 1978) included the in-service training of general and special educational, instructional, related services, and support personnel. Also part of that description addressed the procedures that were to be followed to insure that all personnel were qualified to carry out the purposes of the law and that activities were scheduled which were sufficient to carry out the plans.

Finally, the CSPD described effective procedures for acquiring and disseminating to teachers and administrators of

programs of handicapped children, significant information derived from educational research, demonstrations, and similar projects. Procedures for adopting promising educational practices and materials developed through these projects were outlined (Haughey, 1981).

IN-SERVICE STRATEGIES

With the mandates of PL 94-142, it became imperative to up-date the skills of teacher educators in special education. Heller (1979) noted than prior to 1974 most teacher educators had received their preparation in the area of mental retardation, but were being asked to develop courses and supervise in the areas of learning disabilities, behavior disorders, and severely and profoundly handicapped. Non-special education faculty were being asked to participate in the training of personnel to meet the needs of handicapped students in the regular class. The faculty member was expected to train himself/herself and, in most cases, had to do so with little or no assistance from the institution. The need for systematized in-service education for teacher educators in special education was imperative.

Project RETOOL recognized the need for providing continuing educational opportunities to teacher educators in special education. The project was designed to be implemented in three phases. Phase I was a needs assessment

of current special education teacher educators. Phase II was the development of various models by Institutions of Higher Education (IHEs) and State Education Agencies (SEAs) to meet the needs in Phase I. Phase III was the actual implementation of the models for providing in-service to special education teacher education personnel on state-wide levels.

Project RETOOL, developed from a grant from the Division of Personnel Preparation (BEH), reflected the efforts of four IHEs and a SEA to develop effective approaches for the delivery of continuing education. Models from the five states were designed to provide personnel with adequate opportunities to participate in "tooling up" experiences. These experiences varied within each state. Examples of models of training were topical conferences, short site visits, independent studies, summer workshops, postdoctoral fellowships, faculty exchange, media packages, programmed materials and returning to classroom teaching.

Another federally funded grant from BEH was the Dean's Grant project. These projects were also directed at teacher trainers to assist with faculty development and curriculum changes. Dean's Grant used a variety of delivery systems to

insure that regular education preservice teachers would be prepared to teach handicapped students in the regular classroom. The regular faculty was in-serviced in areas of the law, characteristics of students, and modifications for the handicapped. Foundations courses were revised to include those areas. New courses were developed. "Attitudinal" workshops were conducted to prepare the teacher trainer.

Since PL 94-142 mandated that education of handicapped students be provided in the least restrictive setting, it led to the return to the regular classroom of many students with handicaps and served to prevent the placement in special classes of countless others. The result (Heller,1978) was a shift in accountability for the education of many handicapped children from the special educator to the regular educator. With that shift came the realization that regular teachers needed great assistance if they were to adequately and effectively accommodate students with handicaps in their classrooms. Their needs were not just ones of instructional adaptions, but ones of attitude as well. After all, many teachers were in regular education instead of special education by choice because they did not want to work with students who were handicapped. Thus,

in-service for the regular educator had to deal with both instructional accommodation and teacher acceptance.

According to Heller (1978) funding patterns tended to indicate that more emphasis was placed on providing in-service to the regular educator that the special educator was neglected. This happened even though there were a number of persons best described as "residual retreads" teaching in special education. These were persons who had secured their certification in special education after being verified in other areas initially. There was no intent to indicate that these teachers were less than "good" qualitatively; however, these individuals were equally in need of in-service education. Add to this group the vast majority of special educators who wanted to keep up with changes in techniques, strategies, methodologies, laws, and so on, and the demand for in-service became so great that it was overwhelming.

It became obvious that all resources could not be directed toward the in-service training of regular educators; rather a balance was needed which respected, with sensitivity, the needs of both groups.

Larrivee (1980) described a project that was funded as a regular education in-service training project for a 3-year

period from 1975-1978. The primary focus of Project RETAP (Regular Education Teachers and Principals) was the successful integration of the mildly handicapped students. The project accepted five schools to participate each year. The format required the participation of the building principal and two regular education teachers from each school. The operational plan called for the participants to conduct workshops for the staff in their building on a monthly basis.

Training began with an intensive 6-week summer workshop which met for 4-hour sessions. These sessions were designed to provide them with the consultation and support necessary for the implementation of appropriate educational and behavioral strategies.

The training activities involved three levels. The first level was general exposure to special education (i.e. categorical definitions and characteristics, rationale for mainstreaming). A second level of the teacher training was concerned with management of the total classroom and involved assessing and modifying teaching style and classroom management practices, as well as accommodating for individualized instruction. The final training objective was

to develop competencies in informal diagnostic assessment and subsequent appropriate instructional strategies.

To facilitate this phase of the training process, a target group of students was selected in each classroom. Using a variety of assessment instruments, those children whose academic, social, and behavioral needs required specific intervention were identified. Weekly training sessions during the school year dealt in particular with targeted students and concerns to meeting their individual needs.

The effectiveness of the RETAP in-service training program was assessed primarily in terms of affective and cognitive student outcomes and attitudinal and behavioral teacher outcomes. The evaluation design was principally concerned with determining the impact on the training in terms of the degree to which: (a) project teachers would demonstrate a pattern of behavior more appropriate for meeting the needs of mildly handicapped learners, and (b) targeted students would benefit as a result of the specific intervention strategies employed by their teachers.

Over the 3-year period, 27 kindergarten through sixth grade regular teachers participated for the duration of the

school year. The data source included 25 teachers, 17 females and 8 males, from 15 schools within 8 communities, which were urban, suburban, and rural areas. Eight of the schools served low socioeconomic status students and were eligible for Title I funds. The classroom size ranged from 20 to 38, with an average of 26 students.

In order to determine if the project objectives were met, the appropriate analysis was to compare the gain scores across the target and the nontarget groups. Since the target group and the nontarget group were not strictly comparable, a discrepant group from the nontarget group comparable to the target group was formed for comparison purposes. An examination of Table 2 indicated that approximately 20% of the target group were academically discrepant and an equal number were behaviorally or socially discrepant.

Table 2. Comparison of mean gains by group

Comparison of mean gains by group

Variable	Target	Group Discrepant	Nontarget	Standard Deviation	*F* Value
Reading	29.60 (62)	33.50 (67)	23.80 (139)	38.83	1.53
Math	40.81 (54)	35.09 (65)	49.04 (152)	62.17	4.50*
Language	55.59 (54)	59.23 (79)	50.59 (138)	73.52	0.36
Behavior ratings**	-4.47 (81)	-15.40 (115)	8.74 (294)	76.74	4.33*
Peer ratings** (sociogram)	-.11 (80)	-.08 (136)	-.11 (267)	.89	2.22
Self-ratings** (sociogram)	-.11 (40)	.33 (79)	-.73 (118)	1.67	4.77*
School attitude	3.42 (65)	2.59 (95)	2.83 (217)	11.67	0.10

*$p < .01$

**A negative gain indicates change in the desired direction

Mean gains collapsed across grade and years for each of the seven variables for the three groups are shown in Table 3.

Table 3. Students discrepant by variable

	Academic Discrepancy												
	IQ Below 90			1.0-1.9 Yrs Discrepant*					2.0 & Above Yrs. Discrepant**				
				1 area			2+ areas		1 area			2+ areas	
Group	*n*	#	%	*n*	#	%	#	%	*n*	#	%	#	%
Target	70	22	31	85	24	28	20	24	72	12	16	17	24
Nontarget	457	73	16	510	52	10	36	7	443	26	6	11	2

	Other Discrepancy											
	Behavior Rating (below 20th percentile)			Social Status (below 20th percentile)			Self-Rating (rating of 4 or 5)			School Attitude (below 20th percentile)		
Group	*n*	#	%	*n*	#	%	*n*	#	%	*n*	#	%
Target	101	11	11	101	18	18	85	28	33	60	11	18
Nontarget	642	10	2	642	10	2	539	89	17	355	60	17

Note: The demoninators used to calculate the percentages vary considerably due to missing data.
*Grade 1 students omitted.
**Grade 1 and 2 students omitted.

In order to access the impact of the in-service training program on teachers' attitudes toward mainstreaming, the attitudes of three groups of regular education teachers were compared: (a) the participating teachers who received intensive in-service training over a 1-year period; (b) the teachers who attended the monthly in-sevice training sessions during the school year; and (c) a random sample of teachers. Table 4 presents the results of the analysis of variance.

Table 4. ANOVA table of the attitude score by level of inservice training

	ss	df	mss	F
Between groups	4462.64	2	2231.32	5.57*
Within groups	427663.26	1068	400.43	
Total	432125.90	1070		

*$p < .003$

These findings strongly indicated that teachers exposed to intensive in-service training and consultation, developed a positive attitude toward mainstreaming in general and toward their self-perceptions of ability to teach special needs students.

The results reported provided supportive data that teachers who received comprehensive training were able to bring about the positive growth for mainstreamed students while simultaneously accomplishing similar gains for all their students. The data summarized reflected the positive impact that the intensive training had, not only in effecting change in teacher behavior, but in pupil performance as well.

Roth (1980) described a different type of in-service training model. Project SETT Up (Special Education via Television - Teacher Upgrade) grew out of a need for staff development in Virginia, a state with sparse population areas. The program was designed to prepare teachers to recognize and respond to the special education needs of gifted or handicapped children.

The in-service training of teachers was conducted over a two-way Instructional Television Fixed Service (ITFS)

channel, one of 28 non-profit educational channels in the 1500-2690 megahertz band set aside by the Federal Communications Commission.

The two way system permitted the instructor to see and hear participants at one receiving schoolroom through the use of a television transmitter on a mobile van that carried the picture and audio from one schoolroom to the other four schoolrooms keyed into the course.

The teacher-students in four of the five classrooms could dial a studio number and ask questions of the instructor, while the fifth classroom - the one the instructor was seeing - could ask direct questions. The questions in every case became part of the audio transmitted. Since the transmitter was on a mobile van, each of the five classrooms was on camera in turn, a different one each week.

The project had 12 full-time and 48 part-time faculty members and technicans. It operated on a $425,000 budget, of which approximately $125,000 was provided by the State and the rest by the U.S. Department of Education. From 1975 through 1980, the federal government spent $1,700,000 on Virginia Centex projects, the State out in over $500,000, and local districts invested over $600,000 for a total cost of

nearly three million dollars.

The savings in energy, number of faculty, and teacher time were pointed out. It was an efficient way to reach many teacher-students in a vast area. The Centex System was a "surefire" way to prepare teachers for the difficulties of serving more children on each end of the spectrum of abilities - gifted and handicapped.

Stram (1980) discussed four generic teacher competencies that were needed by special educators who were responsible for providing services to mildly and moderately handicapped students. Data obtained from several sources, which included a survey of teachers, showed the following areas of need for more training: (a) individual pupil assessment, (b) systematic design, implementation and evaluation of instructional programs, (c) development of appropriate instructional alternatives especially at the secondary level, and (d) functioning as members of interdisciplinary child study teams and teacher consultants.

Rucker and Vautour (1981) described the Child Study Team Training Program (CSTTP) which was a systematic approach to addressing the operation of multidisciplinary teams. The CSTPP was a comprehensive multimedia package for training

personnel in team procedures for planning the education programs of handicapped children.

The CSTTP was a modular program structured around the following:

Module 1 The Rationale for Teams

Included activities that reviewed fundamental research on group dynamics and its relevency to educational planning for handicapped children.

Module 2 Referral Preparation and Review

Reviewed issues related to the location of possible students needing special education. Attention focused on referral sources, data sharing, and data review procedures.

Module 3 IEP Planning

Addressed activities involved in developing individualized education programs based on diagnostic data. Specific attention focused on the implementation of the elements required under PL 94-142. Emphasis was also placed on the classroom teacher's role in this process.

Module 4 Procedural Considerations

Provided a systematic review of the major due process requirements relative to programming for handicapped children.

Module 5 Parent Involvement

Addressed strategies for insuring that parents were aware of their rights, and were involved in all decisions related to their children.

Module 6 Administrative Concerns

Focused on issues surrounding the monitoring of effective team operation and documentation strategies. Specific attention was paid to techniques to insure that team members systematically carried out their duties.

The CSTTP was designed for use by school districts, intermediate education units, state departments of education, and university training programs. It required 35 to 50 hours of training and could be used with a variety of schedules which increased its flexibility. A number of data bases were available to assess the merits of the Child Study Team Training.

With increased financial burdens, many school districts

turned to methods for developing and using competent paraprofessionals to work with children and teachers in special setttings.

The Kansas State Department of Education (Kelly and Havlicek, 1982) initiated a training program for special education paraprofessionals. This program was expanded to incorporate the Facilitators Model, a variation of the trainer-of-trainers model. The principal components included a legislative mandate requiring training, compensation of paraprofessionals, cooperation of districts, and a strong emphasis upon the education team concept of paraprofessional and teachers. Training materials and manuals were developed and made available for use by others states who were developing such programs.

The Career Associate in Special Education (CASE) project was also designed to train competent paraprofessionals. The project objectives were oriented toward developing competencies in the following areas: (1) characteristics of various handicapping conditions, (2) principles of behavior management, and (3) educational programming techniques and materials for teaching handicapped learners. (Wheatley, et al, 1981)

Physicians interacting with handicapped children and young adults became aware of deficiencies in their own training (Powers and Healy, 1982). Recognizing the need, the American Academy of Pediatrics (AAP), with the support from the Office of Special Education, developed a model 16-hour inservice training curriculum for use in training over 5,000 primary care physicans who served handicapped children and their families.

The project was designed to affect physicans' (a) interpersonal and professional attitudes toward handicapped children and their families; (b) cognitive knowledge about handicapped children; (c) clinical skills relating to handicapped children; and (d) interactions with the educational system.

A collaborative approach was taken in implementation of the program. A pediatrician-special educator team from each of the AAP's 56 chapters was trained to deliver the program. Over 65 teams offered the training across the country and conducted an average of four 16-hour programs each.

To support the training, a series of videotapes were developed for use with each model. Many were "trigger" sequences designed to foster discussion in critical issue

areas. Others took the physican into regular, special education and resource classrooms. Videotapes also examined the process of mainstreaming as well as issues related to controversial therapies.

A two-volume set of participant's manuals were developed. These manuels provided readings, references, and annotated bibliographies in each of the modular areas and was supplemented with resource materials specific to each area in which the course was offered.

An interium evaluation of 500 primary care physicans who participated was carried out. The evaluation focused on participant perceptions of the degree to which the instructional objectives were met and perceptions of physicans' service roles in relation to handicapped children and their families in the context of their primary care practices.

The most interesting preliminary findings were those yielded by the Role Designation Opinionnaire which ascertained the degree of involvement physicans perceived to be important to establish and maintain with handicapped children and their families. Analyses of the Likert scale results indicated that all of the role designation items

were seen as important services. The evaluation results indicated that impact was made.

The Parent Educational Advocacy Training Center (Intrilligator and Saettler, 1978) developed a program to train parents in self-advocacy and to train educational advocates to act on behalf of children and parents. The types of skills that parents acquired in this program included minimal educational, legal, and interpersonal skills necessary to join with school officials in writing and monitoring their children's Individualized Education Plans.

Wheatley (1981) described the Parents Train Parents project of the PACER Center in Minnesota. The major goal of the project was to inform parents of handicapped children of their rights and responsibilities under state and federal legislation. To achieve this goal, the project operated five levels of communication and training.

The Evaluation Training Consortium was designed to provide in-service education to university personnel, state education agency staff, and local education agency staff. The program was designed to upgrade the skills of the 'trainers of trainers' group. The Discrepancy Evaluation Model (DEM) was developed and adopted by a large percentage

of Division of Personnel Preparation grant recipients (Brinkerhoff, 1980).

Nadler and Merron (1980) described a collaborative model for in-service training. The New Jersey Mainstream In-Service Project was a cooperative effort among the State Education Agency, 50 local education agencies and several colleges and universities. It was a model for teacher training efforts and also provided alternatives for university faculty participation. Although the content of the program was specifically to facilitate the process of educating the handicapped child in the least restrictive environment, the intent of the consortium was to develop a system for in-service that would accommodate many topics of interest.

EVALUATION OF IN-SERVICE TRAINING

During the last decade, much attention has been given to the problems associated with in-service training. Knowlton (1980) suggested that a major source of criticism was the use of short-term, defect-based training approaches in which (a) in-service consumers (teachers, administrators, and support personnel) were characterized as deficient in relation to a perceived training need, and (b) there was an assumed aptitude-treatment interaction between a perceived need and a set of short-term in-service activities.

Even with the criticism, short-term workshops continued to be a service option for meeting training needs. Therefore Knowlton (1980) designed an efficient, functional system for evaluating and improving the short-term in-service sessions. A matrix was developed which focused on two evaluative targets: learning outcomes and the learning process. The structure of the matrix allowed the practitioner to obtain decision-making information relative to the targets across three evaluative conditions: (a) pre-post session, (b) within session, and (c) follow-up.

Brinkerhoff (1980) suggested that evaluation of in-service programming can be usefully construed to have three major functions:

1. To facilitate planning: determination of program to goals and strategies;
2. To facilitate and develop a program's implementation;
3. To assess the effects of in-service programs upon the school (or other work) environment.

An example of an evaluation of an inservice training program was provided by McCoy, et al (1980). Training for Individualized Mainstream Education (Project Time) was designed to allow project staff to determine whether the in-service project program influenced attitudes, knowledge, and practices with regular classroom teachers and to identify ways in which instructional procedures could be improved.

Project TIME focused on a continuous model of in-service training. In this model, elementary school teachers from three contiguous districts in Arizona attended class one night a week, 2 hours a night, for 15 weeks. During the 1978-79 and 1979-80 academic years a total of 120 teachers were involved. Instructional competencies were divided into four units: (a) sensitization, (b) management, (c) good

teaching practices, and (d) individualization.

The program evaluation occured under three conditions: input, process, and outcomes. For the input phase, the project developed a Competency Evaluation Scale and unit pretests. For the process phase, project staff developed a Participant Feedback Scale. The project used four outcome measures. These included the Competency Evaluation Scales, a Follow-up Survey, Unit Posttests, and a Classroom Observation Scale.

The evaluation presented was one in which materials, activities, and lectures were systematically assessed and refined as the need arose. The major purpose of the evaluation procedure was to gather data which could help the inservice staff make decision about improving the instruction.

Brinkerhoff (1980) noted that comprehensive program evaluation that is responsive to and designed to facilitate the developmental needs of programs was essential to progress. Evaluation methods that were based solely on outcome evaluations and rooted exclusively in experimental design approaches were incapable of meeting program design and developmental needs. "Evaluation must begin in the

workplace with broad context analyses to identify real needs, progressing through the fits and starts of on-going program development, finally returning to the workplace to determine both the impact of programs upon needs and the impact of changing needs upon the design of future programs."

PRESERVICE TRAINING

Professional preparation programs in special education have been closely scrutinized since the passage of PL 94-142. Since educational services to handicapped children were multifacted, a wider range of teacher competencies were needed by both the regular and special educator. Service delivery (Prasse and Fafard, 1982) was characterized by input from a variety of professionals representing different disciplines, by expanded curriculum accompanied by technological advances, and by administrative flexibility permitting education to occur in a variety of settings.

Professionals working with handicapped children were to be multifaceted. Teachers were required to function in a process of collaboration rather than isolation. The responsibilities for determining the nature of a handicapping condition and deciding on proper placement and practices were to be jointly shared rather than resting on a single person.

Because PL 94-142 required major improvements in the way the needs of exceptional students were addressed, it created an immediate and extensive need for more trained staff. The

shortage of qualified special educators, as well as the need to provide special training for regular education teachers was a persistent problem in implementing the law.

Haring (1986) noted that over 55,000 special education teachers were added to the ranks in the first six years after PL 94-142 took effect, yet almost every state continued to report a lack of teachers in rural and urban/inner city areas. There were also shortages of teachers for secondary and older handicapped students, and for the seriously emotionally disturbed.

Institutions of higher education with teacher preparation programs were forced to examine curricula and certification policies and practices in order to meet the new demands. Preservice training accommodated those demands by the modification of content in existing courses, addition of new courses, or the total restructure of the complete training program. Proposals of models for changing teacher education were profuse.

It was essential that the quality of teacher preparation be high. One of the ways to control that quality was through certification. There were two basic types of special education certification: categorical and noncategorical. The

first type required training for a specific handicapped population. The second type required a basic core of coursework and qualified the teacher to work with a wide range of handicaps.

Noncategorical versus categorical teacher training was a widely debated and complicated issue. Heller, et.al. (1979) identified several key components of this debate: certification, political climate, and identified training needs.

Historically, the etiological or medical model emphasis in special education had promoted the categorical orientation. That orientation influenced special education literature, terminology, and the formulation of basic concepts for parental, political and other special interest groups.

Categories were based on the premise that categorization reflected the need for differential materials and teaching. Teacher training stressed knowledge in these specific areas and certification followed suit.

The political climate reflected by PL 94-142 was a philosophical orientation toward generic special education yet funding was associated with categories and did not

encourage a noncategorical approach to special education teacher training.

Personnel needs (Reynolds, 1979) needed to be addressed. Special education teachers of deaf, blind, speech and severely handicapped children were needed. Specialists who work directly with distinctly handicapped students needed very specific training. Teacher education training programs responded to those personnel needs, certification requirements and to the directives of the funding sources.

PL 94-142 changed the logic of school placements with the mandate of education of the handicapped student in the least restrictive environment. According to Reynolds (1979) it created pressures to place handicapped students in regular programs and to deliver special education to them in that regular setting. The sociology of the situation called for more generic, support-oriented special education personnel and less narrowly categorical framing of the special education program.

That mandate, together with the requirement that Individual Educational Plans (IEP) be developed for each handicapped student, suggested the need for change in teacher education.

Most of the mildly handicapped students were to be maintained in regular classes and given supportive services which included careful diagnostic studies as they progressed, coupled with an intensive form of instruction in basic subjects according to individual needs. No research/knowledge base suggested that the instructional needs of mildly handicapped students differed markedly from one category to another or that separate teachers and teaching stations were needed.

Based on these findings and mandates, a non-categorical approach to teacher training was emphasized. PL 94-142 required the training and deployment of large numbers of generic special educators who were prepared to work closely with regular teachers in support of children with mild degrees of handicaps.

Perhaps the largest impact on the restructuring of teacher education programs involved the least restrictive environment. In 1975, the Bureau of Education for the Handicapped (now called Office of Special Education) began the Dean's Grant funding program. The purpose (Allen and Turnbull, 1984) was to assist with the complex process of institutional reform in teacher education relating to the

mainstreaming of handicapped students. The major objectives of the Dean's Grants were to address curriculum and faculty development issues to insure that regular education preservice teachers would be sufficiently prepared to teach handicapped students in the regular classrooms. During the peak period of funding (1980-1981), 141 Dean's Grants projects were operating, involving a federal financial commitment of $7,250,000.

Dean's Grant used a variety of delivery systems to organize and deliver content on the education of handicapped students. Reviews of Dean's Grants (Lombardi, et.al., 1982) suggested that faculty development of teacher trainers was of utmost importance. Unless the teacher trainers had an accepting attitude and correct information about mainstreaming, program changes were nearly impossible.

Lombardi, Meadowcroft and Strasburger (1982) described the Dean's Grant project at West Virginia University. In particular, achievement of the following two goals for the first year of the WVU project was measured:

1. An attitudinal change by the teacher trainers demonstrating a greater respect for and acceptance of the mainstreaming movement.

2. An informational change demonstrating greater knowledge about PL 94-142 and the learning characteristics of students with various handicapping conditions.

Participant in the study were 40 full-time faculty of the College of Human Resources and Education from departments which were responsible for the professional education foundation sequence. Two instruments were used to assess either an attitudinal change or an increase in knowledge about the law and handicapped students.

Both instruments were administered to an experimental and a control group on a pretest and posttest basis. The intervention activities for the experimental group consisted of a series of workshops with emphasis on sensitivity. In addition, a mainstreaming library of books, journals, audio-visual aids, and other resource materials was established. Technical assistance for course modifications was also available as part of the invervention program.

The first goal, to modify the attitudes of teacher trainers, was achieved. The second goal, to increase trainers' knowledge about the law, was not. It was concluded that future projects must include pronounced dissemination of information about the law and learner characteristics.

Dean's Grant projects have also used a variety of delivery systems to deliver content to regular education majors on the education of handicapped students. According to a national survey conducted by Gazvoda in 1981 (Allen and Turnbull, 1984) approximately one-half of the Dean's Grants projects engaged in the development of one or more new courses and one-third of the projects reported redesigning their elementary or secondary programs. Finally, some Dean's Grant projects recommended the delivery system of adding a separate one to two credit hour courses and also integrating content into ongoing courses.

The separate course plan involved adding a new course requirement (usually three semester credit hours) that focused in-depth on the education of handicapped students in regular classrooms. Integration across courses involved merging competencies relating to mainstreaming into all or most of the generic and area-specific teacher education

courses.

The main advantage of the separate course was that content was taught by faculty with expertise in the education of the handicapped, usually special education faculty. Two major disadvantages of the separate course were that the majority of the faculty remained uninvolved in the social and educational innovation and that time for a new course had to be found within the existing program or added to it. It was the simplest to implement.

The integrated approach was attempted by many Dean's Grant projects. The strengths of this system tended to be philosophical ones, such as "mainstreaming" the content on handicapped students throughout teacher education programs. There were educational gaps between special education and teacher education departments as well as territorial concerns. Practical matters such as the extensive time and resources which were necessary to train a cross-section of teacher education faculty and to engage in extensive revision of the curriculum were other weaknesses.

A combination incorporating both generic one to two hour course and the integration of mainstreaming content into area-specific professional courses was adopted in several

institutions. This was a relatively untested delivery system.

Substantial federal, institutional and professional attention and effort was directed toward the implementation of curriculum and faculty development activities in the Dean's Grant projects.

Stram (1980) suggested that, when considering changes in special education teacher preparation programs, the following points needed to be considered:

1. College-and-university based special education programs should prepare graduates to work in settings where a continuum of service delivery options facilitate least restrictive environments. In order to function in such settings, there should be training options to prepare teachers for the role options which are available in schools.

2. What is taught in university-and-college based special education programs has little transfer to the classroom. That is, faculty of colleges and universities are rewarded for theorizing about good assessment, instructional design, and teacher behavior rather than displaying these behaviors themselves and training students to do likewise. Moreover, there are many competencies which cannot be taught or taught well apart from the school classroom (e.g. working with parents, consulting with teachers). Greater involvement in district programs can increase the transfer value of much preservice education.

3. Greater involvement of trainee in district programs will require an extended professional preparation program. Extending the training period from four to five years with addition of a sixth year internship should be part of the preparation of special educators.

4. Preparation of regular educators separate from special educators should not continue. College and university faculty resistance to integrated teacher preparation can be mitigated by moving more of the professional training into the classroom. At the local level, renogotiating professional roles and developing service delivery options in order to better serve the handicapped, both should take precedence over the territorial disputes which appear to characterize university programs.

Turnbull, Woods, and Moore (1979) suggested that directions in teacher education must consider: (a) earlier experiences with children during preservice training programs and continued exploration of field-based education; (b) early and continued feedback on performance and non-stigmatizing discussion of self-selection and other career opportunities; (c) increased program evaluation with emphasis on field-initiated research; (d) cost-effectiveness; (e) faculty leave and exchange policies to facilitate professional development; and (f) continuing education requirements and incentives and retraining, particularily in the areas of developing organizational skills and affective skills.

PRESERVICE TRAINING STRATEGIES

The role and responsiblity of teacher education changed because of the changing demands and expectations of public schools as a result of PL 94-142. Virtually all instructional personnel concerned with the educational needs of exceptional children were affected. Teachers were required to acquire the skills and knowledge to identify instructional problems, individualize educational programs, and manage inappropriate classroom behaviors. In order enable their graduates to acquire those skills, teacher training programs designed diverse delivery systems to develop competent teachers of children with special needs.

Various methods had been used in preservice personnel training programs. These methods traditionally included lecture, group discussion, literature dissemination, films, and/or other media presentations. These training methods (Semmel, 1981) were popular but their adequacy and efficacy for assuring acquisition and generalizations of skills has been questioned. Difficulty in translating knowledge into classroom practice is a principle problem in teacher training.

A major premise of special education is the recognition of and provisions for individual differences in children. This is what preservice teachers were told, and hopefully, this is what they were taught to do. In many instances teachers educators implored preservice teachers to individualize while, at the same time, ignored the individual differences in the teacher trainees. This seemed to preclude positive transfer.

An experimental preservice teacher preparation program at the University of Florida was called PROTEACH - short for professional teacher. This program (Smith, Carroll, Fry, 1984) required greater depth of study in the academic teaching fields, more clinical/field work, and a more comprehensive evaluation of both students and program than the traditional program it replaced. In special education the program included a computerized, individualized evaluation system that monitored the prospective teachers' performance as they worked with individual students.

A study (Morgan, 1980) at Florida State University was conducted which compared the effectiveness of two instructional methods in an introductory undergraduate course in special education. The instructional methods were

individualized instructional modules and the conventional lecture-discussion method. The dependent variables were cognitive achievement (content mastery), attitude toward the concept of individualized instruction, and attitude toward the instruction itself.

Analyses of variance were computed for each dependent variable to test for the main effects between the instructional models. No significant differences were observed between the instructional methods on any of the dependent variables. One significant effect was discovered. Dependent students in the conventional group achieved significantly better than dependent students in the individualized method. This showed that if dependent students learn best in a conventional instructional mode, instructional options should be available to meet that need. In this manner, conventional instruction became individualized instruction for that group of students. Option-loaded instructional environments which best match the individual needs of the students must be provided.

Hall (1983) designed a learning center approach to teacher training. A portable learning center was developed to model instructional methods for teachers of gifted

students. The center included task cards and other materials which were to teach self-direction strategies. The approach which used discussion, lecture, simulation and individualization of instruction, helped preservice teachers understand the development of self-direction skills. The theoretical analysis and simulation assisted the teachers to make generalizations to actual teaching situations.

The difficulty in translating knowledge into classroom practice can be facilitated through direct practicum experiences in the field. Field practicum placement is generally accepted as being effective. Crain (1980) described a generic practicum which served four purposes for special education teacher preparation programs: (a) to provide a teaching practicum for special educators completeing requirements for the masters' degree in special education and/or special education certification; (b) to provide cost-free academic instruction to special education students of elementary school age; (c) to ascertain if academic skills of mildly cognitively and affectively handicapped children could be maintained from May to October by a 7-week summer program with mainly academic content; and (d) to test the hypothesis that instruction based on specific generic

teaching competencies could produce educational gains for mildly handicapped children, irrespective of accepted identifying labels.

Teachers were required to complete a total of 240 clock hours of practicum experience. Of these, 136 hours were direct services to students. The remaining 104 hours included indirect services such as weekly seminars, parent conferences, consultation with supervisor, research time at the library, observations, and preparation time.

Pretest data and post-treatment data were collected at the end of the 7 weeks. The t-test of significance indicated that score gains for the students were significant in mathematics, reading recognition and reading comprehension. The regular year classroom teachers provided data upon which the IEPs from the previous May and the following October were developed. The grade equivalent scores for mathematics, reading recognition, and reading comprehension were converted to months to facilitate in the analysis of data. T-tests of May and October were significant at the $p<.001$ level.

Shores, Burney, and Wiegerink (1976) suggested that, if improved instructional services to exceptional children are a major mission of special education teacher preparation

programs, the effectiveness of these programs must be evaluated by ascertaining the effectiveness of prospective teachers through the performance of the students taught. The summer practicum described was one step toward achieving that end.

Although a practicum experience is effective, it is expensive, time consuming and can be potentially damaging in terms of the effects that trainee errors can have on children.Yet practical experiences are necessary for learning. Cantrell and Edwards (1974) suggested that "short of the real situation, simulation provides the most realistic opportunity for the teacher trainee to practice his acquired skills."

Simulation refers to the presentation of a situation or set of circumstances in which the learner must make decisions or take other actions. Simulation can be achieved through role playing, gaming, audio/video-tape or film re-enactment, or through computer applications.

In order to improve teachers' skills in working with parents, a curriculum unit on "conferencing and communicating with parents of a handicapped child" was developed by DeBerry (1980). A simulation was used which took the

participants, playing parent roles, through the development of two children - one normal, one physically and/or mentally handicapped. The children and the parents were represented by pieces which moved around a game board. Choice/Change cards moved the pieces "developmentally" through the game.

Each of the five sessions of Choice/Chance was evaluated by the participants to establish the correspondence between the simulation and real life, in terms of both experiences and emotional reactions. Following the administration of the evaluation instrument, the aggregated data were analyzed using a reliability package of SPSS. That analysis revealed a reliability coefficient of .94, indicating a high degree of reliability for the instrument.

The data indicated that participants encountered 94% of those emotions or experiences which have been attributed to parents of handicapped children. It can be concluded that this simulation did involve participants in an experience congruent with the experiences and emotions expressed by parents of children who are handicapped.

Microcomputers have been shown to be valuable tools for training special educators in a variety of curricular areas. Some examples of empirically validated computer applications

in teacher education were described by McCann and Kelemen (1984).

Cartwright, Cartwright, and Robine (1972) developed the Computer Assisted Remedial Education (CARE) system, which presented key concepts regarding the identification of handicapped children. After completing the tutorial module, the trainee was presented with a simulated classroom and was asked to screen the "students" for possible handicaps. Through interactive questioning and feedback, the user learned to make diagnostic decisions and suggest remediation strategies. CARE students scored 24% higher on criterion tests than students in a conventional course using lecture, discussion, and film and slide presentations. Further, CARE participants completed the course in one-third less time than required for the traditional course.

Semmel and Olson (1976) developed the Computer Assisted Teacher Training System (CATTS), which gave teachers continuous performance feedback during the actual instruction of students. Feedback was achieved by an observer entering teacher and pupil behavior into a computer, where the information was processed and transmitted in summary format to a television monitor within the teacher's view. With such

dynamic and immediate feedback, teachers were able to more easily modify their behavior according to desired objectives, without gross disruption of the instructional process. Application of CATTS in experimental classrooms demonstrated that the system was effective in facilitating desired changes in teacher behavior.

Semmel, Varnhagen and McCann (1981) developed the Microgames system for training special education personnel to apply behavior management principles in the classroom. The system included four instructional components: (a) computer assisted instruction (CAI) program comprising seven tutorial modules that addressed central concepts in behavior management; (b) the Behavior Game, which allowed trainees to apply behavior management principles in a simulated classroom; (c) a feedback program which allowed trainees to review their performance in the Behavior Game; and (d) a Computer-Guided Implementation (CGI) program, which provided a data management framework for applying behavior management principles in actual classroom settings. Experimental analysis of the Behavior Game and CAI modules demonstrated significant increases in knowledge of behavior management principles.

The Arithmetic Drill Game (Semmel, Varnhagen, Copeland, and Rice, 1982) was a microcomputer-based system for evaluating the vigilance and multiple attention skills of teacher trainees. Using a simulated mainstream classroom presented graphically on a monitor screen, the trainee was given five separate tasks to be performed simultaneously: (a) monitoring the on-task behavior of a handicapped student and intervening when the student is off-task; (b) generating single-digit multiplication problems for all students; (c) selecting volunteer and nonvolunteer students on an alternating basis; (d) determining the correctness of the selected student's responses; and (e) retaining information regarding the task performance (correctness and volunteerism) of individual students. Evaluation of the Arithmetic Drill Game demonstrated a sizeable correlation (r=.76) between trainee performance in the game and field supervisors' ratings of subjects vigilance and multiple attention skills in actual classroom settings. A follow-up survey of participants indicated that the game evoked thought processes and emotions characteristics of instruction in real mainstreamed classrooms.

Lloyd and Idol-Maestas (1983) pointed out that one of

the most common ways of giving teacher trainees practice in making decisions about appropriate classroom strategies and techniques was the case study approach with written tests to assess student performance. Paper and pencil tests can only assess the teacher trainee's initial choice of strategy. Computer simulations were not so limited. The computer simulation provided a controlled environment where the learner focused on a few relevant details at one time. Simulations also telescoped time so participants did not have to wait for months or years to see the consequences of an action. It allowed participants to try out strategies and techniques without fear of failure or censure. Computer simulations enabled participants to be active rather than passive learners.

There can be little doubt that teacher education is facing a new generation of technology. According to Judd and Dieterle (1984) microcomputers appear to have become a new partner in the teacher education process. In a study of microcomputer usage in universities in the United States, the respondents reported using the microcomputer for instructional assistance, research and development, and word processing.

Hofmeiter and Thorkildsen (1981) stated that while considerable research needs to be conducted to determine the most appropriate applications in special education, there are indications that the applications of technology will be extensive. Institutions of higher education must make changes in curriculum and instructional methodology to ensure that special educators are "literate" in this new technology.

Instructional theory suggests the importance of modeling and practice in learning. Trainees might learn better about instructional applications of microcomputers through computer-based instructional programs. Harper (1983) developed and field-tested a computer-assisted instruction (CAI) program for training teachers to critically evaluate instructional software. Commerical CAI tutorials in computer operation and programming are available and offer teacher educators a cost-effective means of promoting computer literacy.

Some microcomputer applications (Bennett, 1982) that can be used to directly deliver training are being developed by Project RETOOL. These microcomputer programs will instruct special educators in a variety of topics including curriculum modifications for mainstreamed students and

survival strategies for special educators. Such programs will provide opportunities for highly individualized staff development experiences.

PRESERVICE TRAINING EVALUATION

The evaluation of preservice programs should be comprehensive and continuous but there are a number of obstacles to establishing the validity of a program as a whole. In the programs described below, many were examined for effectiveness in program segments.

Quisenberry (1982) evaluated the 3-year Dean's Grant project at Southern Illinois University-Carbondale. The project was designed to: (1) create a set of materials and resources relating to serving the handicapped which would be used in the training of teachers; (2) provide training for faculty on PL 94-142 and the implications of the law for training teachers and administrators; (3) develop and disseminate materials relating to serving the handicapped, for use by students and faculty in the program; (4) involve in the change process personnel directly responsible for the program; and (5) integrate materials and activities developed by the project into existing courses and programs.

The first year of the project was devoted to developing and disseminating materials to and planning for students in

required education courses. The second year focused on the impact of the materials and activities on the supervisors of practicum students experiences, method course instructors, and students. The objective of the final year was to familiarize administrators and other educational leaders with the needs, characteristics, and the methods of instructing handicapped students. An evaluation was presented of the progress made in each of these three years.

Roberson (1980) surveyed colleges and universities in the southeastern region of the United States to determine the degree to which modifications were being made to their preservice curricula to satisfy federal and state laws in the preparation of regular teachers to address the needs of "mainstreamed" handicapped students. The sarple for the survey consisted of 128 institutions listed by the National Council for Accreditation of Teacher Education (NCATE).

Results from the study, (which were received in December, 1978) indicated that 31% of the public institutions had implemented a plan for faculty development as compared to 9% of the private institutions. Of the 64 institutions of higher education used in the study, 24% indicated they had fully implemented curriculum changes necessary to prepare

preservice teachers.

In the evaluation of Project RETOOL, Heller and Schilit (1979) discussed that during its operation 574 college-and-university-level teacher educators in special education were provided in-service or continuing education. Five unique models in five states were utilized to accomplish this activity, and each proved reasonably effective in accomplishing the overall goals established for the Project. In a selected follow-up of individuals who participated in the various models nearly all respondents rated their training as excellent.

The cost-efficiency of Project RETOOL was "spectacular." The accomplishments in terms of dollars expended was significant. Not once during its funding duration did the project receive an allocation beyond 50% of the requested level. This constraint created hardship for the operators of the models and required alterations in delivery plans. Dissemination for the project consisted primarily of presentations at major conferences and conventions dealing with special education. "Few project have accomplished more for less."

Hodgson, Mulkerne and Saulson (1980) evaluated a 1-year

preservice training project for special education paraprofessionals. The Career Associate in Special Education (CASE) program was a comprehensive, competency-based training program. Training was through various instructional methods which included field trips, practica, required readings, evaluations, experience, and structured practice sessions.

Periodic written and verbal evaluations assured that quality training was maintained. Practicum experience totaling 180 hours in various educational settings provided the student with direct, hands-on experience. 96% of students who completed program evaluations ranked practicum experiences as excellent. CASE graduates had a high percentage of employability and acceptance into upper division educational programs, which attested to the quality of the program.

The productivity of teaching can be improved and research that has already been performed points the way. Ellson (1986) summarized 75 research studies that reported great differences in one or more quantitative indices of teaching productivity when two methods of teaching and/or two management systems were compared. In each comparison of two techniques, the common dependent variable was relative

productivity or cost, i.e., the ratio of the effects of an experimental treatment and a comparison treatment that provided a baseline. Each study reported at least one difference in teaching productivity - teaching effectiveness, cost, efficiency, or cost-effectiveness - large enough to be educationally significant.

One hundred twenty-five teaching strategies were grouped into eight categories that reflected practical, technological and instructional management characteristics. Of these, five represented variants of conventional instruction and three represented variants of programmed instruction.

Although the primary focus was on elementary and secondary schools, the study examined the Open University of Great Britian. The Open University provided an example of the academic application of programmed learning. The basic programmed instruction was supplemented with several conventional teaching procedures - lectures, demonstrations, laboratories, and tutoring. The teaching effectiveness of the form of programmed learning used in the Open University plan was no better than that of more conventional models of university teaching. However, it was a model for economy and

cost-effectiveness in university-level instruction.

Although cost data were not given in all of the studies, relative costs and relative cost-effectiveness was estimated for several instructional and management procedures (see Table 5).

TABLE 5

TABLE 5
Estimates of Instructional Costs

Section A: Conventional Instruction and Management Procedures

	Category	Basic Program Unit Cost	Useful Life (Years)	Program Cost per Year	Program Cost per Hour	Pupil/ Teacher Ratio	Program Cost per Pupil-Hour
CT	Conventional instruction	$25,000*	1	$25,000	$23.15	18*	$1.29
CMCT	Content-modified conventional tutoring	25,000	1	25,000	23.15	18	1.29
PMCT	Procedure-modified conventional tutoring	25,000	1	25,000	23.15	18	1.29
CICT	Unprogrammed tutoring within conventional tutoring (unpaid tutors)	25,000	1	25,000	23.15	18	1.29
ACT	Augmented conventional tutoring	25,000+	1	25,000+	23.15+	9	2.58+
MLC	Monitored learning center	25,000	1	25,000	23.15	81	.29

Section B: Independent Study Supplements to Conventional Instruction

	Category	Basic Program Unit Cost	Useful Life (Years)	Program Cost per Year	Program Cost per Hour	Pupil/ Teacher Ratio	Program Cost per Pupil-Hour
CBB	Conventional book-based self-instruction	$ 180	3	$ 60	$ .06	1	$ .06
CT	Conventional tutoring (unpaid tutors)	0	1	0	.00	1	.00
CI	Conventional tutoring (paid tutors, $5/hr.)	5,400	1	5,400	5.00	1	5.00
PL	Programmed self-instruction**	180	3	60	.06	1	.06
PI	Programmed tutoring (unpaid tutors)	180	3	60	.06	1	.06
PT	Programmed tutoring (paid tutors, $5/hr.)	5,580	1,3	5,460	5.06	1	5.06
PGT	Programmed group teaching*** (unpaid teachers)	180	3	60	.06	9	<.01
CAI	Computerized programmed learning	3,680	5	736	.68	1	.68
CDI	Computerized programmed group teaching	3,850	5	770	.71	9	.08
PBID	Performance-based instructional design	0	NA	NA	NA	NA	0

*Source: U.S. Office of Education (and, in the case of unit cost, the assumption that teacher salaries represent 80% of instructional costs).
**In the Open University and IMPACT plans.
***In the IMPACT plan.

Kennedy (1982) described how the Standards for Evaluations of Educational Programs, Project, and Innovations for Developing an Evaluation Design were applied to Preservice Innovations in Mainstream Education (PRIME), a Dean's Grant project. The applications of the standards of utility, feasibility, propriety and accuracy in evaluating were discussed and found to be useful in evaluation design, data collection, and reporting information.

CHANGES IN SPECIAL EDUCATION

An initiative is being advanced by the federal government and by educational "authorities" (Will, 1986; Wang, Reynolds, Walberg, 1985; Lilly, 1986) to create fundamental changes in the way in which mildly to moderately handicapped students and other special- needs students (bilingual,etc.) are educated. The Council for Exceptional Children, Teacher Education Division (CEC/TED) (1986) suggested that it should be called "an initiative to revise instructional programs for low-performing students." Through The National Inquiry Into The Future of Education For Students With Special Needs, CEC/TED is examining the regular education initiatives in a systematic way, with particular interest in its potential effects on school improvements issues and on educational excellence. Information (Smith-Davis,1986) will be emanated from such activities as site visits in local school districts and state offices; reviews, analyses, and syntheses of research and professional literature; interviews with officials at local, state and federal levels; formulation of legal opinion; historical

reviews; studies of relevant assumptions; follow-up studies; state-of-the art summaries concerning specific aspects of education; surveys; and many other forms of inquiry.

SUMMARY

The current emphasis upon performance criteria, accountability, and cost effectiveness is exerting pressure on teacher trainers to develop effective teacher-training programs. For these reasons, it is important to establish a scientific basis for training special education teachers. Teacher educators need to be able to claim with confidence that graduates of their programs will be able to work effectively with exceptional children.

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