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ABSTRACT

Five papers describe ways to integrate knowledge from regular and special education at the university level. L. Hudson and M. Carroll ("The Preservice Teacher Experiences Variation in the Meaning Making of Handicapped and Nonhandicapped Learners") review adaptations in a competency based teacher education program to include information on high incidence handicapping conditions and simulation activities. "A Critique of Present Methods of Teaching Remedial Mathematics" by G. Shirk and R. Geiman proposes an alternate approach which features ongoing diagnosis, evaluation of learning processes and consideration of preferred modes of input. In "Public Law 94-142: Equal Educational Opportunity at Last?" S. Snyder traces the American concern with common schooling. Implementaion of mainstreaming is the topic of the final two papers: "Individualizing Group Instruction in the Regular Classroom: A Mandate for Secondary Teachers" by C. Warger and M. Henning, and "Socialization as a Goal of Mainstreaming" by J. Ahern. (CL)

Perspectives on the Integration of Regular and Special Education: Eliminating the Knowledge Dichotomy at the University Level

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Dean's Grant Project

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Foreword

With the support of a three-year Dean's Grant begun in 1980, faculty members from The University of Toledo's College of Education and Allied Professions have succeeded in integrating content related to Public Law 94-142 and Ohio House Bill 455 into their Competency Based Teacher Education (CBTE) program and into other programs at the graduate and undergraduate levels, such as those in Administration and Supervision, Guidance and Counselor Education, and Vocational Education. In accordance with the design of the Dean's Grant project, many faculty members have been involved, first in awareness and knowledge acquisition activities, and then in the actual development of course content related to P.L. 94-142 and H.B. 455.

The impact of the Dean's Grant upon our college's faculty and programs has been extensive. The papers in this publication represent the efforts of those faculty members who, during the course of grant activities, chose to explore, in-depth, certain issues related to the implementation of P.L. 94-142 and H.B. 455. The theme of the publication, "Integration of Regular and Special Education," is appropriately revealed in several of the papers which reflect an on-going collaboration between regular and special education professors who team teach in CBTE block courses. This model of professional collaboration originated with our Competency Based Teacher Education program and it has been extended even further as a result of the Dean's Grant.

It is anticipated that this collection of papers will be of major interest to teacher educators who are concerned not only with extending the mainstreaming knowledge base, but who also must prepare teachers to implement mainstreaming in the schools.

George E. Dickson
Dean of the College of Education and
Allied Professions Emeritus

Contents

Introduction

The passage of Public Law 94-142 and the subsequent funding of personnel preparation in the form of Deans' Grants aimed at eliminating well-established educational dichotomies. The major dichotomy was a dual system for the delivery of instructional services: one for nonhandicapped students, another one for those with handicaps. The argument that handicapped students needed teachers with special training, special instructional techniques and materials, and special groupings fostered the notion that there were, in fact, two distinct types of students.

The dichotomy of service delivery systems at the public school level went hand in hand with the one at the university level. The latter dichotomy found expression in separate departments for regular and special education, separate professional preparation programs, and separate research directions; all of which assumed a separate knowledge base.

As teacher education institutions began redesigning their regular certification programs to include special education concepts, this knowledge dichotomy became a critical issue. In most cases, it was agreed that it would be unwise and impractical to ask regular educators to add a layer of special education expertise to their knowledge base. It seemed preferable, and consistent with the least restrictive environment principle, to integrate relevant knowledge from each field.[1]

The papers presented in this publication provide examples of ways to integrate knowledge from regular and special education. In the first paper, Hudson and Carroll describe the development of a preprofessional teacher education course which had to include content on learning and development and on high incidence handicapping conditions. Their paper reveals that special education content can be integrated effectively into the overall framework of a regular education course.

[1]Edwin Martin describes the various aspects of the regular/special education dichotomy and advocates a sharing of knowledge in the preface to: M.C. Reynolds (Ed.), *Futures of education for exceptional students: Emerging structures.* Minneapolis: National Support Systems Project, 1978.

The following two papers represent the integration of regular and special education in the research areas of learning theory and history of education. Shirk and Geiman propose a model of mathematics teaching/learning which combines existing knowledge from the fields of neurology, special education, and mathematics education. Snyder, an educational historian, describes how Public Law 94-142 can be considered the latest in a long line of attempts to answer the generic question: "Who shall be educated?"

In the last two papers, the authors discuss issues related to the actual implementation of mainstreaming. Warger and Henning, after considering the processes of instructing students in individualized and large-group settings, developed a practical and feasible model for meeting handicapped and nonhandicapped students' needs in regular secondary classrooms. Ahern describes how regular elementary teachers can utilize social integration theory as a basis for selecting appropriate curriculum materials for use with mainstreamed handicapped and nonhandicapped children.

In writing these papers, faculty members from The University of Toledo's College of Education and Allied Professions crossed the knowledge boundaries previously in existence between regular and special education. It is through continued collaboration of this type that barriers to providing appropriate education for **all** students can be eliminated.

Loviah E. Aldinger, Coordinator
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The Preservice Teacher Experiences Variation in the Meaning Making of Handicapped and Nonhandicapped Learners

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While in a kindergarten classroom recently, one of our graduate students observed a group of children and their teacher, Mrs. Smith. They were examining a small branch to which a cocoon was attached and a series of photographs depicting the life cycle of the butterfly. One little boy stared very intently at the cocoon, and after a long while he asked, "Teacher, is the butterfly the same animal as the caterpillar?" The graduate student related the boy's question to the Piagetian construct of conservation and recognized the potential victory inherent in the boy's question about what stays the same despite the transformation from caterpillar to butterfly. In her mind, she searched for possible objects and events in the boy's experience which, if recalled, might help him verify his hypothesis. Mrs. Smith, however, apparently thought the boy was asking a question about how the butterfly would look when it emerged from the cocoon, for she responded, "Now, boys and girls, do butterflies **look** like caterpillars?"

All three persons in this situation were engaged in a common activity—meaning making. The particular meanings they made were different, but each person's meaning was related in quite predictable ways to both the content and the process of his/her thought. The meaning that the child made of the series of photographs was constrained by both **what he knew**—about caterpillars, butterflies and metamorphosis—and **how he knew**—his tendency to focus primarily on the perceptual differences among the pictured objects. Similarly, the meaning that Mrs. Smith made of the child's question was constrained by **what she knew**—about how children think and learn —and **how she knew**—her failure to conceive of more than one possible explanation for the child's behavior.

The meaning that the graduate student made differed markedly from the teacher's meaning, despite their similarity in age and classroom experience.

The graduate student not only recognized that her own meaning for the event could be different from the boy's, but also understood how he was most probably making meaning and what might be at stake for him in asking the question. Moreover, she knew how to help him find the answer for himself.

We would argue that the graduate student was the "real" teacher in this situation, for we believe that making meaning is the essense of the learning process and finding ways to assist learners as they make meaning is the essence of the teaching process. The reader may recognize the Piagetian origins of this perspective on teaching. Piaget's theory has helped many of us to understand how the meaning-making system of the child differs, both in content and process, from the adult's. However, the age and stage related aspects of Piaget's theory have led to a generalized expectation on the part of many educators that adolescents and adults will **always** make different meanings than children. Piaget never said nor meant to imply this. In fact, he considered the interaction between content and process to be a critical one. In various places he has written that one's most advanced thinking skills are not applied universally across all contents. In other words, the meanings that persons make are a function of not only their level of operational thought but also their level of content knowledge.

Unfortunately, this idea is far less widely known and appreciated than Piaget's stage concepts. For example, most teachers do expect high school students, and certainly college students, to function formally, regardless of the content area. The truth is, however, that in many classes high school and college students lack the content knowledge and/or the cognitive skills to function formally. Researchers who study the development of operational abilities find that formal thinking is the typical form of reasoning in only one-third of eighteen-year-olds (Epstein, 1979).

Such data raise serious questions for those of us involved in teacher education. If we are to help preservice teachers learn to structure educational environments to fit the particular content knowledge and processing capacities of their students, we must first determine if our own instructional methods are developmentally appropriate for both formal and non-formal preservice teachers. Could there be a mismatch between teacher education and teacher education students' minds?

The University of Toledo has a widely known and respected competency-based teacher education (CBTE) program. Yet for some time many of us have been concerned about the meaning preservice teachers were making of the content and process of their instruction. The goals of the program were clearly aimed at operational understanding of instructional design and implementation, but many students were dealing with the content in a preoperational way, focusing almost exclusively on the representations. For example, they learned to write extensive unit plans with goal statements matched to objectives, activities and assessments, but too often they em-

phasized verbal learning about objects and actions for which both they and their pupils lacked concrete referents.

The meaning-making construct is a powerful tool in explaining such behavior. The CBTE model is a highly differentiated and organized formal system. Many of our students were not highly formal thinkers to begin with, and they were being asked to adapt to a new content, one for which they had relatively few existing schemes. This combination led to their focusing on discrete elements or bits within this complex system, rather than focusing on the relations among the many parts. Completing an inquiry lesson and a concept lesson became their goals, rather than using an inquiry strategy to help students master a concept which was, itself, related to other concepts.

With the advent of Public Law 94-142, it appeared that preservice teachers would have to learn to make appropriate meanings of an even more complex system of instruction. To accomplish this, they would have to adapt to more new content for which they had few existing schemes. The idea of having a separate course or separate modules with discrete special education objectives seemed to conflict with the very idea of mainstreaming. Moreover, such a procedure would increase the probability that the preservice teachers would (a) organize the information in discrete bits and not as a functioning part of the whole, and (b) at some later time treat handicapped persons as different. If preservice teachers were to conceptualize handicapped persons as contributing members of the group, it seemed to us that mainstreaming concepts would have to be integrated into each facet of the teacher education program.

The usefulness of the meaning-making construct as an organizing principle in the design of such an integrated program is illustrated in the following paragraphs, which describe several aspects of a sophomore-level course within The University of Toledo's CBTE program. The course, entitled "Exploring Education: The Learner and the Learning Environment," is an introduction to development and learning.

We began with the idea that each of us makes our own meaning by organizing and adapting to our experiences, using whatever knowledge and cognitive abilities we possess. We asked ourselves what this idea implied for our introductory course. Acknowledging the importance of this principle served first to remind us that students enter colleges of education with a minimum of twelve years of classroom experience. Even though few students have reflected at great length on their school experiences, the meanings they have made of them constitute organized adaptations. Until they objectify these experiences, students are doomed to be psychologically embedded in them. Thus, their existing schemes need to be the starting point for the process of teacher education. For this reason, we begin our course by encouraging students to discuss their most and least memorable learning experiences, their best and worst teachers, and their own learner behaviors in different contexts. This serves several purposes. First, we acknowledge that

their own personal experiences are valid data, and we credit them with what they already know, teacher behaviors we hope they will model with their own students. Second, we help students to objectify their understandings about teaching and learning. Finally, we identify initial conceptions for which we, as instructors, may be required to find appropriate contradictions.

The idea that meaning making is constructed by the learner and is dependent upon existing knowledge and processing capacities weighed heavily in our plans for the course. We knew that many of our students were not highly formal thinkers, and we would be asking them to interact with novel content. This suggests that words, presented through lecture or print, should not be the sole, or even primary, means by which teacher educators attempt to convey their understandings of the teaching-learning process, especially to entry level students. In our course, therefore, the students' introduction to both Piagetian theory and handicapping conditions is active and concrete.

During the first week of class they take a paper-and-pencil test of concrete and formal operations entitled *How Is Your Logic?* As a diagnostic tool, this test provides us with some hypotheses about how best to work with individual students. Even more importantly, however, it provides the students with the experience of using their own cognitive structures to solve a set of common problems. Rather than memorizing a verbal definition which lacks a meaningful referent, students are able to "hook up" the definition of cognitive structures to the mental processes they used when constructing their responses to items on the logic test. Classroom discussion of how students went about solving particular problems can be used to deepen students' understandings of similarities and differences in cognitive functioning. In addition, the test is a useful springboard for discussions of test anxiety, of what test scores do and do not mean, and of the value of focusing on the process of problem solving rather than the solution.

During the second week of the course, the focus shifts from the self (the preservice teacher) to the other (children in the field setting). Preservice teachers are given packets containing Piagetian tasks which are developmentally appropriate for children in their particular field placements. Since these include classrooms from preschool to high school, a wide variety of tasks are used, e.g., number conservation, classification, proportional reasoning. The tasks are distributed so that several preservice teachers administer the same tasks to children of different ages. Upon returning to the campus, preservice teachers pool their observations, placing their data in a matrix which indicates how many children of a given age passed or failed particular tasks. The use of the matrix helps them to organize the material in a meaningful way, provides a concrete referent for the non-formal thinkers, and underscores the wide variations in cognitive functioning among nonhandicapped learners, both within and across age levels.

This experience with wide variations in cognitive functioning "prepares" our students for content related to high incidence handicapping

conditions such as learning disabilities and behavior disorders. At this point in the course, these handicapping conditions are introduced, not as afflictions to the person, but as barriers to learning. The barriers may be primarily within the person, e.g., a visual deficiency, or primarily within the physical environment, e.g., poor acoustics or a developmentally inappropriate task. Regardless of their particular form, these barriers function to create even more variation in the meaning making of learners.

The formal presentation of high incidence handicapping conditions focuses on learning disabilities, behavior disorders, and mild mental retardation. Learning disabilities are described in terms of variations in activity level, attention, motor coordination, discrimination, organization, and body image. Ways in which teachers may change the learning environment to facilitate meaning making by children with such disabilities are then discussed. These changes include alterations in means of input and output such as material and modality, classroom structure, and organization of tasks.

Behavior disorders are described in terms of variations in social interaction and academic work. The characteristics and possible causes of behavior disorders are described, and plans for the removal of school-related causes are discussed.

The presentation on mild mental retardation includes a description of delays in cognitive, emotional, and social development. Instructional tasks which are not appropriate for the developmental level of the mildly retarded learner are viewed as a barrier to learning. Ways to adapt and alter tasks to make them more appropriate for such learners are discussed.

Once the characteristics of high incidence handicapping conditions have been presented, activities to give this information meaning are experienced by preservice teachers. They participate in simulations of handicapping conditions which include writing from a reversed image, threading a needle while wearing mittens, listening to a story with garbled sound, reading orally from a script with distorted letters, and cutting with left-handed scissors. Preservice teachers also experience embarrassment, as they must complete the tasks in front of peers and instructors who are making negative comments about their performance.

The simulation activities are followed by a discussion on barriers in the environment which influence learning. Plans for the removal of such barriers or the alteration of the learning environment for persons with handicapping conditions are designed. Preservice teachers then use their field settings to identify environmental factors which may be functioning as barriers to learning.

As they experience and identify barriers to learning, our preservice teachers are beginning to question the traditional dichotomy between regular and special learners. They are beginning to see that meaning making is a con-

tinuum along which the handicapped and the nonhandicapped learner can be conceptualized. In addition, they are now seeking help in constructing a variety of learning activities to enhance the meaning making of students with wide variations in content knowledge and processing capabilities.

In recent months, preservice teachers who took this course three or four quarters ago have come back to describe how they are reconceptualizing what they learned earlier. It is clear from their feedback that they are coming to understand the kind of learners they are, as well as their role in the facilitation of learning. Most begin, at least, to understand that textbook definitions of conservation and seriation are not the stuff of which good teaching is made. They need this knowledge, but in a different, more flexible form. We would call it a more operational form. Like the graduate student whom we discussed earlier, they need to be able to recognize the potential victory in the kindergartner's question about whether the butterfly is the same animal as the caterpillar.

Recently a preservice teacher nearing the end of her program returned to relate the following experience: "You know, in my field placement this quarter I had a little girl who had never passed a paper-and-pencil spelling test. I gave her a box of Scrabble tiles and asked her to spell the words with them. You might not believe it, but she only misspelled one word. It's just like you said. She had a barrier to learning." And then, in a voice filled with both wonder and respect, she added, "Isn't it wonderful that when you allow students to express what they know in different ways, they know more than you think."

References

Epstein, H. Brain growth and cognitive functioning. *Colorado Journal of Educational Research*, 1979, *19*, 4.

A Critique of Present Methods of Teaching Remedial Mathematics

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Many students in American schools are not developing an adequate understanding of mathematics. This deficiency is commonly treated by labeling children "learning disabled" or by adding another year of mathematics instruction at the secondary level. When analyzed, both treatments duplicate the already ineffective methods of the regular classroom. By implication the fault lies, not with the methods of instruction or the curriculum, but with the student, who for some reason is unable to learn mathematics. Ten years ago, Morris Kline (1973) suggested that the fault does lie in part with the curriculum and methods of instruction of mathematics. In this paper both explanations for mathematics deficiency are described. A model of mathematics teaching/learning which considers the student, the learning process, and the curriculum is proposed.

THE STUDENT WHO HAS PROBLEMS WITH MATHEMATICS

Children experiencing problems with mathematics are labeled "lazy," "sloppy," "careless," and "stupid" when, in fact, they may be unable to align figures, unable to read numbers accurately, unable to record their thoughts accurately, or unable to memorize (Gaddes, 1980; Kinsbourne & Caplan, 1979). The causes of these learning problems are many and are widely debated. Two possible causes, specific math learning disabilities and developmental lag, are discussed in the following sections.

Math Learning Disabilities. Many neurologists believe that dyscalculia, a processing dysfunction which can affect the reception, expression, or synthesizing of mathematical concepts, is merely a manifestation of dyslexia, the generally known language dysfunction (Bohlen & Mabee, 1981; Poeck & Orgass, 1975). Other neurologists disagree, however, citing case histories and post mortem evidence that dyscalculia exists as a separate disorder (Bryan & Bryan, 1975; Fox, 1965; Gerstmann, 1957; Grewel, 1972; Hecaen, 1967;

Kertesz, 1979; Kinsbourne & Caplan, 1979; Levin, 1979; Spellacy & Peter, 1978; Springer & Deutsch, 1981; Strub & Geschwind, 1974). For example, Gerstmann (1957) discovered a group of symptoms which seems to occur when a person is injured on the right side of the head. The Gerstmann syndrome includes dyscalculia, or the inability to perform some aspect of mathematical computation. The person may be able to understand the process, but is unable to express what is known either in an oral or written manner; or the person may be able to read mathematical symbols, but is unable to comprehend what has been read. Another form of dyscalculia involves the ability to write the symbols in a meaningful way, but the inability to read what has just been written (Gerstmann, 1957; Kertesz, 1979; Springer & Deutsch, 1981). In spite of the above findings, researchers are still "quite in the dark about dyscalculia" (Bryan & Bryan, 1975, p. 241).

Acalculia, the total inability to reason about mathematics, appears to be rare, although the research regarding any of the mathematical disabilities is limited. Kertesz (1979) confirms this with his statement that "the isolation and analysis of various factors involving acalculia remains difficult and unstandardized" (p. 222). Controversy continues concerning both the causes and the definition of dyscalculia and acalculia.

Since dyscalculia and acalculia are so poorly understood, it has been difficult to accurately diagnose math learning disabilities in children. The tests which claim to be identifying mathematical learning disabilities are inconclusive in that they are unable to identify a distinct population (MacIntyre, Keeton & Agard, 1980). In testing for learning disabilities (including math), we appear to be operating under the guise of scientific and professional expertise, when children are often diagnosed according to whims or biases (Coles, 1978; MacIntyre et al., 1980; Rist & Harrell, 1982; Schrag & Divoky, 1975). Divoky's (1974) claim that "the learning disabled are whomever the diagnosticians want them to be" (p. 21) is especially true with regard to math disabilities, an area long neglected by researchers more interested in the identification of language disorders.

Developmental Lag. Children may also experience mathematical learning difficulties because they are not "ready" to perform calculations or solve problems at the symbolic level. According to Logue (1977), one should consider the possibility that children's errors are not the result of carelessness or stupidity, but arise from "developmental lags." He suggests that "there is such a thing as arithmetical readiness which is as vital a condition of progress in this field, as reading readiness is in its field" (p. 319). If one accepts the idea that mathematics uses abstract symbols and formal operations to describe the concrete world, then it is quite possible that much of what is taught in elementary lessons is beyond the logical capability of the child (Copeland, 1979; Piaget, 1970/1971).

Mathematicians and mathematics teachers are content specialists who have not devoted much time to children who fail at mathematics, since most

of these children are able to avoid the subject. However, it is possible that an important cause of "math failure" can be found, not in the learner, but in the very nature of mathematics content and teaching methods, especially at the elementary level. The following critical analysis of prevailing practices in mathematics instruction supports this premise.

MATHEMATICS INSTRUCTION

Traditionally, arithmetic calculation has been the focus of mathematics instruction at the elementary level. There have been few attempts to integrate topics such as geometry, problem solving, or measurement into the curriculum. Evaluation of students is based almost exclusively upon their progress through the arithmetic hierarchy, with emphasis on the end product rather than on the process of arriving at solutions.

Erlwanger's (1973) research confirms this focus on the product rather than the process of learning. He found that children viewed mathematics as a magical system with many unrelated rules. The student tried to discover which rule the teacher was going to apply when correcting the paper and then answered accordingly. Students believed that there could be many different answers for the same problem. Therefore, answering correctly became a matter of guessing which answer the teacher wanted.

In interviews with college students, the authors have found that these views toward the rules of mathematics often remain unchanged. In discussing the conversion of grams to kilograms, a college junior stated: "I thought we were just changing the numbers. I didn't know there was a reason for changing them."

Research in mathematics education has focused on the discovery of better teaching methods for transmitting arithmetic content. There has been little concern for clarifying the learning process. It appears that mathematics continues to be considered by the general public and educators alike as a preexistent body of knowledge which can best be learned through a vigorous application of logical principles and rules—an abstract system which can best be learned in the abstract.

Attempts to improve mathematics instruction have usually started with the secondary program and filtered down to the elementary program. The "modern math" movement of the 1960's began with a modification of the secondary curriculum, emphasizing content changes such as the removal of topics thought to be non-essential. The elementary program was modified to prepare students for the changes in the secondary program rather than as a direct response to the needs and characteristics of the elementary child.

The emphasis on rule-learning at the expense of understanding carries over into mathematics instruction in special education classrooms. Indeed, prescriptions for today's "learning disabled" child appear to be strikingly similar to those advocated in previous years for the "slow learner" (Glennon

& Wilson, 1972; Glennon, 1981). The special education curriculum differs from the regular one in the expected rate of progress and level of attainment. Drill in arithmetic calculations continues to be emphasized, and the major instructional difference is the one-on-one tutoring setting (Fleischner & Garnett, 1980; Margolis, 1981).

While admitting to the "relative paucity of research and development" activities concerning math curricula for special learners, Fleischner & Garnett (1980) examined two curricula which are used in special education classrooms. One of those programs, Individually Prescribed Instruction (IPI), has been cited by Erlwanger (1973), not as an exemplary program, but as a program based on a concept of individualization which could lead to severe learning difficulties in children. Erlwanger found two major flaws in the IPI program. First, since the student works independently through the IPI materials, the teacher does not develop an understanding of "how the pupil learns and what he thinks." Second, Erlwanger considers the IPI system of programmed instruction "rigid," with a tendency "to develop in the pupil an inflexible rule-oriented attitude toward mathematics, in which rules that conflict with intuition are considered 'magical' and the quest for answers 'a wild goose chase' " (p. 25).

In summary, according to current practices in both regular and special education mathematics programs, children are caught in a system which focuses on rule acquisition, often at the expense of a true understanding of mathematics.

AN ALTERNATE APPROACH

The following approach to mathematics instruction is currently being used with both children and adults at The University of Toledo's Educational Improvement Center. In an effort to meet the varying needs of people with learning difficulties in mathematics, the approach synthesizes information from the three major realms of research into mathematics disabilities: special education, medical-neurological research, and mathematics education. Diagnostic and instructional procedures take into account brain functions, modes of input, and theories of learning and development.

Diagnostic procedures are an on-going part of the instructional program. These procedures begin with a screening test such as the *Stanford Diagnostic Mathematics Test* (Beatty, Madden, Gardner & Karlsen, 1976) or the *Key Math Arithmetic Test* (Connolly, Nachtmann & Pritchett, 1976). Students are observed while completing the screening test so that appropriate instructional areas and further diagnostic questions can be formulated. As instruction proceeds, students continue to be observed and questioned concerning the procedures which they use to solve problems. The importance of the interview is clearly outlined by Erlwanger (1973) and is indispensable in both diagnosis and instruction.

Students are observed to determine whether they perform best in an

analytical or a holistic manner. Traditional math instruction places a heavy emphasis upon the analytical style of thinking. Addition precedes subtraction; multiplication precedes division, as concepts are presented bit by bit. However, certain students at the Center have succeeded when the processes are reversed.

Preferred modes of input are considered and the process of math learning is emphasized. In the traditional classroom, sight and hearing are the two modes of input used almost exclusively in math education. At the Center, we encourage students to express their discoveries about mathematical concepts in many forms. They tell about them, write them down, draw them, and use models to re-enact them. Students use symbols to shortcut their recording procedures. As they record their experiences, they begin to see patterns and rules emerge. Students are surprised when they recognize their rules as the same rules that caused them so much difficulty. They are amazed that they **can** learn and use mathematics.

CONCLUSION

While aspects of the mathematics teaching/learning process have been examined by mathematics educators, special educators, and neurologists, there has been little sharing of research findings. Further, the combined efforts of these three fields leave vast areas unexamined. Large branches of research on this subject have only recently been acknowledged. Included in this category would be the neurological research conducted in Germany prior to World War II (Wolman, 1977; Gillespie, 1970) and the Soviet research of Krutetskii (1968/1976).

At this time there does not exist a paradigm which provides a basis for understanding the mathematics teaching/learning process. There are some indications that researchers are beginning to consider mathematics instruction in terms of a cognitive developmental model. However, most practitioners (i.e., teachers, school administrators, and textbook writers) still follow a behaviorist/systems model which ignores the child.

REFERENCES

Beatty, L.S., Madden, R., Gardner, E.F., & Karlsen, B. *Stanford Diagnostic Mathematics Test.* New York: Harcourt Brace Jovanovich, 1976.

Bohlen, K., & Mabee, W. Math disabilities: A limited review of causation and remediation. *Journal for Special Educators,* 1981, *17,* 270-280.

Bryan, T.H., & Bryan, J.H. *Understanding learning disabilities.* Port Washington, NY: Alfred Publishing, 1975.

Coles, G.S. The learning-disabilities test battery: Empirical and social issues. *Harvard Educational Review,* 1978, *84,* 313-340.

Connolly, A.J., Nachtmann, W., & Pritchett, E.M. *Key Math Diagnostic Arithmetic Test.* Circle Pines, MN: American Guidance Service, Inc., 1976.

Copeland, R.W. *How children learn mathematics: Teaching implications of Piaget's research.* (3rd ed.). New York: Macmillan, 1979.

Divoky, D. Education's latest victim: The "LD" kid. *Learning, the Magazine for Creative Teaching*, 1974, *3*(2), 20-25.

Erlwanger, S.H. Benny's conception of rules and answers in IPI mathematics. *Journal of Children's Mathematical Behavior*, 1973, *1*(2), 7-26.

Fleischner, J., & Garnett, K. *Arithmetic learning disabilities: A literature review research review series 1979-80* (vol. 4). New York: Columbia University, 1980. (ERIC Document Reproduction Service No. ED 210 843).

Fox, A.M. Anaphylactoid shock induced by oral penicillin and resulting in Gerstmann's syndrom. *British Medical Journal*, July 1965, pp. 206-208.

Gaddes, W. *Learning disabilities and brain function: A neuropsychological approach.* New York: Springer-Verlag, 1980.

Gerstmann, J. Some notes on the Gerstmann syndrome. *Neurology*, 1957, *7*, 866-869.

Gillespie, C.C. (Ed.) *Dictionary of scientific biography* (Vol. 2). New York: Charles Scribner's Sons, 1970.

Glennon, V.J., & Wilson, J. Diagnostic-prescriptive teaching. In W.C. Lowry (Ed.), *The slow learner in mathematics. 35th yearbook of the National Council of Teachers of Mathematics.* Reston, VA: NCTM, 1972.

Glennon, V.J. Variables in a theory of mathematics instruction for exceptional children and youth. In V.J. Glennon (Ed.), *The mathematical education of exceptional children and youth: An interdisciplinary approach.* Reston, VA: NCTM, 1981.

Grewel, F. Acalculia. In M.T. Sarno (Ed.), *Aphasia: Selected readings.* New York: Meredith Corporation, 1972.

Hecaen, H. Brain mechanisms suggested by studies of parietal lobes. In C.H. Millikan & F.L. Darley (Eds.), *Brain mechanisms underlying speech and languages.* New York: Grune and Stratton, 1967.

Kertesz, A. *Aphasia and associated disorders: Taxonomy, localization, and recovery.* New York: Gune & Stratton, 1979.

Kinsbourne, M., & Caplan, P. *Children's learning and attention problems.* Boston: Little, Brown, 1979.

Kline, M. *Why Johnny can't add: The failure of the new math.* New York: St. Martin's Press, 1973.

Krutetskii, V.A. [*The psychology of mathematical abilities in school children.*] (J. Kilpatrick & I. Wirszup, Eds., J. Teller, trans.) Chicago: University of Chicago Press, 1976. (Originally published, 1968.)

Levin, H.S. The acalculias. In K.M. Heilman & E. Valenstein (Eds.), *Clinical neuropsychology.* New York: Oxford University Press, 1979.

Logue, G. Learning disabilities and math inadequacy. *Academic Therapy*, 1977, *12*, 309-319.

MacIntyre, R.B., Keeton, A., & Agard, R. *Identification of learning disabilities in Ontario: A validity study.* Toronto: Ontario Department of Education, 1980. (ERIC Document Reproduction Service No. ED 189 819).

Margolis, L., & Others. *The special education core curriculum manual intermediate level. Reading, mathematics, written language, study skills.* Bergen County Region Three, Closter,

NJ: Council for Special Education, 1981. (ERIC Document Reproduction Service No. ED 213 239).

Piaget, J. [*Genetic epistemology*] (E. Duckworth, trans.). New York: W.W. Norton & Co., 1971. (Originally published, 1970.)

Poeck, K., & Orgass, B. Gerstmann syndrome without aphasia: Comments on the paper by Strub and Geschwind. *Cortex*, 1975, *11*, 291-295.

Rist, R.C., & Harrell, J.E. Labeling the learning disabled child: The social ecology of educational practice. *American Journal of Orthopsychiatry*, 1982, *52*(1), 146-160.

Schrag, P., & Divoky, D. *The myth of the hyperactive child*. New York: Pantheon Books, 1975.

Spellacy, F., & Peter, B. Dyscalculia and elements of the developmental Gerstmann syndrome in school children. *Cortex*, 1978, *14*, 197-206.

Springer, S.P., & Deutsch, G. *Left brain, right brain*. San Francisco: W.H. Freeman & Co., 1981.

Strub, R., & Geschwind, N. Gerstmann syndrome without aphasia. *Cortex*, 1974, *10*, 378-387.

Wolman, B.B. (Ed.). *International encyclopedia of psychiatry, psychology, psychoanalysis, and neurology*. (12 vols.). New York: Aesculapius Publishers, Inc., 1977.

Public Law 94-142: Equal Educational Opportunity at Last?

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Public Law 94-142 raises a perennial question in educational theory: "Who shall be educated?" Throughout the history of American education various rationales have been put forth to answer this question and, consequently, to determine the access of particular groups of people to educational opportunity. This paper traces the major points at which answers to the question, "Who shall be educated?" have been formulated. Several reasons for which handicapped people have not traditionally been included in the answer are presented. It will be shown that Public Law 94-142 is the latest, and perhaps most revolutionary, attempt to expand the definition of those who should be educated in American public schools.

The Colonial Period

According to Cremin (1980), one of the propositions basic to the establishment of American education was ". . . that the laws of education be relative to the forms of government; hence, while monarchies needed an education to status that would fix each class of the citizenry to its proper place in the social order, republics needed an education to virtue that would motivate all men to choose public over private interest" (p. 2). Free men, then, needed an education for freedom.

But, continues Cremin, were the people who won the revolution and the right to sovereignty simply the residents of the colonies? Considering the status of blacks, most of whom continued in slavery; Indians, who were considered aliens; and women, who surrendered all civil rights upon marriage, the answer to this question was not so obvious. Cremin concludes that ". . . the initial citizenry of the Republic comprised the free white male population of the several states" (p. 7). It was thus this particular group who had access to an education.

In addition to limitations imposed by citizenship, the selection of those to be educated during colonial times was guided by philosophical considera-

tions exemplified by the doctrine of Rationalism. The Rationalist doctrine that the good society is one governed by those most fit to govern certainly had a strong appeal to the leaders of the Enlightenment and their intellectual progeny in the New World. The task of education, according to this view, is first to identify people in terms of their most productive function within the society and then to train them to fulfill that role.

Jefferson's belief in Rationalism, his distrust of government, and his faith in a natural aristocracy led him, early in the life of the new republic, to propose a system of education which was voluntary, selective, and publicly financed. Jefferson's qualified faith in democracy led him to the realization that it was in the state's best interests to finance through taxation a system of education which would "rake from the rubble" those whose natural genius could be exploited to create an elite leadership for the commonwealth. Although Jefferson's scheme was essentially hierarchical and elitist, opportunity for participation was voluntary and, within the limitations set by Jefferson's own orientation with respect to race and sex, democratic.

The Common School Ideology

From Horace Mann early in the nineteenth century to John Dewey almost a century later, there runs a common thread that in the American republic the state has an obligation to provide educational opportunity for all those who are capable of benefiting from it. Mann believed that the rudiments of literacy and morality should be taught to the children of common men and women. The intellectual training would give them a foundation for participation in society, and the moral training would teach them their place in that society. Mann and other educators of his time also argued "that the free common school would break down the barriers of caste and promote a true democracy by equalizing opportunity for every rank of life" (Curti, 1935/1965, p. 197). The common school thus served a utilitarian and a democratic function.

John Dewey expanded and enriched the concept of a common education. Like Mann, Dewey considered education to be the "engine of democracy." According to Dewey, the elimination of class distinctions through education was a necessary condition for the creation of a democratic society rooted in intelligent action. Dewey defined the good society as a combination of social efficiency through scientific endeavour and a common morality based upon a commitment to democratic principles (Dewey, 1916/1966, p. 99).

Extension of the Common School Ideology

In the Kalamazoo case of 1872, the United States Supreme Court had declared the constitutionality of using public tax money to support secondary education. Given the twin forces of urbanization and industrialization in post-Civil War America and the increasing effectiveness of compulsory schooling laws, the meaning of a common schooling was extended to include secondary education. The magnitude of this extension is evident in the fact

that "from 1890 to 1918 there was, on the average, more than one new high school built for every day of the year" (Tyack, 1974, p. 183). Thus, education became increasingly universal through the high school years.

From 1944 through 1946, legislation by the Seventy-Eighth Congress provided subsistence allowance, tuition fees, and supplies for the education of veterans of World War II. This "G.I. Bill" also expanded significantly the numbers of those "who should be educated" at both the secondary and collegiate level. The response of returning servicemen to the G.I. Bill was so overwhelming that it virtually revolutionized American higher education. Contrary to the predictions of the American intellectual establishment, literally thousands of Americans showed they were capable of benefiting from a collegiate education formerly reserved for a small minority of the general population.

Once the secondary school enrollments increased and college admissions were no longer controlled by social class membership, new devices had to be found for selecting people for positions of social, economic, and political leadership and, consequently, for certain types of education. The solution to the problem was sought in the idea that natural aptitudes exist among the general population in measurable degrees. These aptitudes could be identified by scientific tests which measure the extent to which any given individual is capable of benefiting from particular educational experiences. Most of these tests were derived from the I.Q. test developed for the French government at the turn of the century in order to determine which students would profit from state expenditures for furthering their formal education. In the United States a half century later, the Scholastic Aptitude Tests purported to perform the same function. Along with testing programs to separate the fit from the unfit, there also emerged the use of extensive guidance programs to rationalize the process of goal setting and career choices along lines consistent with score results.

In a sense we had come full circle to Jefferson's Rationalism, as aptitude tests were used to "rake from the rubble" those who were most meritorious and who would become the leaders of American society. According to the argument for "intelligence testing," it would be difficult to justify squandering limited educational resources on people who could benefit minimally, if at all, from certain types of instruction.

Education of the Handicapped

For many years the handicapped were excluded from the mainstream of American education because, using a rationale discussed earlier, it was believed that they could not benefit from public education. Early beliefs concerning the potential capabilities of handicapped persons appear to have been influenced by a combination of superstition and economic reality in preindustrialized civilizations. In describing attitudes toward the mentally retarded, Chinn, Drew, and Logan (cited in Gollnick & Chinn, 1983) state

that superstition caused nomadic tribes to fear both physically and mentally handicapped persons. In addition, the handicapped were considered an "economic drain" upon tribes which had difficulty obtaining sufficient food for survival (p. 288).

In more recent times beliefs based on superstition appear to have given way to perceptions about handicapped persons which resemble the phenomenon of racial prejudice. Gliedman and Roth (cited in Gollnick & Chinn, 1983) point out that people who are not handicapped by a physical or mental impairment, like those who are not socially handicapped by the stigma of color, do not understand the problem. They see that handicapped people, like blacks, rarely hold positions of great social, political, or economic influence and, therefore, conclude that they are incapable of attaining such positions. No one "like that," so goes the rationale, could possibly lead a productive, creative life in adult society (p. 289). Given this parallel with racism, will Public Law 94-142 be subjected to the same fate of benign neglect as has been so much of the legislation designed to solve social problems?

Equal Educational Opportunity in the Twentieth Century

In recent years, the legislature and the judiciary have begun to enlarge the definition of who can benefit from education. The 1954 Supreme Court decision (Brown vs. the Topeka Board of Education) and Public Law 94-142 have opened up access to equal educational opportunity for previously excluded minority groups such as blacks and the handicapped.

In one sense Public Law 94-142 is merely the latest in a series of educational reforms attempting to allow this or that group greater access to the educational mainstream. However, not until the passage of Public Law 94-142, has the proposal been advanced that certain students have a right to an individualized educational program designed to meet their specific educational needs. In effect, what the law calls for is a system which optimizes the probability that each student affected by the legislation will receive the maximum education from which he or she is capable of benefiting.

On the face of it, this may be the most revolutionary piece of legislation concerning education to be passed by the United States Congress in its entire history. It is revolutionary in that it goes beyond the question of "Who shall be educated?" It goes beyond the needs of the meritocracy and demands that schools adapt to the child's educational needs. Given the revolutionary potential of Public Law 94-142, one must consider the possible outcomes of this legislation. Several possibilities suggest themselves.

1) Where at all possible, the law will be ignored. Teachers, parents, and administrators will all have reasons why it is impossible or impractical to implement at this time. If there is a recent precedent, it is to be found in Brown vs. the Topeka Board of Education. In this 1954 decision, the Supreme Court ruled that racially segregated schools are illegal and unconstitutional. Yet,

"in the 1978-79 school year, 6,218,024 minority students (60.2 percent) attended schools that were at least 50 percent minority, and 37 percent attended schools that were at least 80 percent minority" (Arrington, 1981, p. 31). It appears that the judicial decision was a necessary but not sufficient condition for achieving integration.

2) Where the law cannot be ignored, it will require huge infusions of money for its implementation. If past experience is any guide to future action, local communities will not tax themselves to implement such a program. Communities will be forced to appeal to federal and/or state governments for financial assistance. In a time of austerity, the probability is high that the law will not be fully implemented because it is too expensive.

3) Public Law 94-142 will be implemented as part of public education, and public education will become increasingly a part of the welfare system. In other words, parents who have the means and the desire to educate their children for participation in the dominant culture of American society will send their children to private schools which will be partially subsidized through public funds. Public education will be responsible for the maintenance and containment of an underclass composed of the poor, ethnic minorities, and the handicapped.

4) Advocacy groups will continue to fight for the full implementation of the mandates of Public Law 94-142. If it is implemented as intended, the American public school will truly become a democratic institution "bound up with the very idea of education as a freeing of individual capacity in a progressive growth directed to social aims" (Dewey, 1916/1966, p. 98).

All of these scenarios are possible; all are probable within constraints set by particular circumstances. All are amenable to modification by people in positions of leadership. Public Law 94-142 has the potential to bring American education into the twentieth century. Whether or not we as professional educators seize that opportunity will determine the future of American education.

REFERENCES

Arrington, K.M. *With all deliberate speed: 1954-19??*. Washington, D.C.: United States Commission on Civil Rights, Clearinghouse Publication 69, November, 1981.

Cremin, L.A. *American education: The national experience, 1783-1876*. New York: Harper Colophon Books, 1980.

Curti, M. *The social ideas of American educators*. Patterson, NJ: Littlefield, Adams and Co., 1965. (Originally published, 1935.)

Dewey, J. *Democracy and education*. New York: The Free Press, 1966. (Originally published, 1916 by Macmillan Company.)

Gollnick, D.M., & Chinn, P.C. *Multicultural education in a pluralistic society*. St. Louis: C.V. Mosby Company, 1983.

Tyack, D.B. *The one best system*. Cambridge, MA: Harvard University Press, 1974.

Individualizing Group Instruction in the Regular Classroom: A Mandate for Secondary Teachers

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For mildly handicapped students who receive remediation in special education programs, the ultimate goal is their integration into regular programs. As a result of Public Law 94-142, increased numbers of handicapped students have moved into regular programs, where teachers have been charged with providing appropriate instruction. However, since school structures have not changed in response to the mainstreaming mandate, the accommodative power of regular teachers to develop appropriate instructional strategies for handicapped students has been limited (Zigmond & Sansone, 1982).

If mainstreaming is to be successful, instruction must assist handicapped students in attaining regular program requirements. Regular teachers need to know which aspects of their instruction will be helpful as well as problematic for handicapped students. For potentially problematic areas, modifications based upon special education instructional principles must be identified and integrated into the regular teacher's existing skill repertoire. Essential to accomplishing this goal is an understanding of certain differences between regular and special education.

This paper explores the instructional dichotomy between regular and special education at the secondary level. Emphasis is placed on identifying those skills and techniques which regular teachers need to consider when educating mainstreamed adolescents.

THE EFFECT OF CURRICULUM ON INSTRUCTION

When asked to identify the hardest thing they ever had to learn, secondary teachers invariably report a **topic** such as algebra, chemistry, grammar, or tennis. With some probing, they will also elaborate on why that topic was so difficult: "I couldn't conceptualize the material;" "I never had time to

read the text in class;" "I never knew what the instructor wanted us to learn;" "There was too much to memorize;" "I couldn't see the relevance of it." These complaints point to problems teachers may have had in providing students with appropriate instruction on a task.

At the secondary level, the goal of regular instruction is to present curriculum content. It is assumed that students have already acquired basic learning skills such as reading, writing, attention to task, etc., thus allowing regular teachers to undertake the major goals of transmitting content and promoting analytical skills. The need to achieve these goals in large-group settings also affects how regular teachers plan and execute their instruction.

Special education programs for mildly handicapped adolescents reflect this heavy emphasis on content acquisition. Many special programs at the secondary level are built upon a compensatory model wherein students receive supplementary instruction to help them master regular program objectives (Wiederholt & McNutt, 1979). Individualized instruction, either in small-group or one-on-one settings, is used to circumvent the student's handicap. Thus, while content may remain the same, teacher instruction may be individualized to match the learner's needs more closely. Visual material may be presented orally, a text written at a lower reading level may be utilized, a written exam may be completed verbally.

The small-group setting in which special education instruction takes place permits a significant amount of individualization. Indeed, for many handicapped students large-group instruction is one of the most problematic aspects of the integration experience, because it is rarely individualized to allow for differences in learning styles and abilities. What is needed in regular classrooms, then, are strategies for individualizing instruction **within** large-group settings.

Using the compensatory model of special education, specialized techniques can be incorporated into the regular educator's presentation to enhance mainstreamed students', as well as all students' learning. Within any educational group there will be variation in student abilities. All students have particular strengths and weaknesses which affect their mastery of curriculum tasks. Mainstreamed handicapped students, for the most part, will not differ greatly from their nonhandicapped peers. Learning disabled students will have preferred learning styles, and educable mentally retarded students may learn at a slower pace. Students with emotional disturbance may possess a more negative attitude toward learning, while physically impaired students may be limited in how they receive and transmit learning material. The task of regular teachers when planning instruction is not to identify student needs so that separate or isolated instruction can be designed, but rather to identify the composite group needs so that individualized approaches to teaching **group** lessons can be incorporated. Consideration of individual learning needs within the group setting is a key element in moving toward a model of instruction which synthesizes the best of special and regular education.

INDIVIDUALIZED GROUP INSTRUCTION

Teachers may have little control over the content of the curriculum or the strengths and weaknesses that students bring into their classrooms, but they do have control over how material will be presented. It is the teacher's individualization of group instruction which is a critical variable in ensuring that learners will master task requirements.

To achieve the goal of individualized group instruction, the task requirements must first be analyzed. Teachers also must ascertain whether individual students within the group possess the prerequisite skills for completing the task. If it is determined that some students will have difficulty with task requirements, it may be necessary to break the task down into its component parts and sequence the instruction of each part according to difficulty.

Analysis of the task involves more than a determination of prerequisite content knowledge or skill. The **process** skills inherent in the teacher's instructional strategy must be evaluated as well. Reading level, cognitive ability to answer questions and comprehend instructions, physical coordination to manipulate instruments, perceptual ability, experiential background necessary to understand the context, and motivation to complete the task are all examples of particular process skills students may need to possess in order to complete a task successfully. If it is determined that some students will be unable to respond successfully to the teacher's instructional style, then modifications are in order.

Instructional modifications can be thought of as ways to clarify the nature of the required task. Without changing the required content, teachers can attend to individual needs within the group by varying and supplementing their instruction. Traditionally, more able students have increased their chances for success on classroom tasks by supplementing the teacher's instruction with the use of such aids as chapter outlines, extra readings, "canned" study guides, or pertinent movies. While it can be argued that these aids are merely "frills" which help already successful learners "get by" more easily, many handicapped students find such instructional additions to be **necessary** for learning. For example, if students cannot read the required text, then instruction which incorporates the use of supplemental books written at lower reading levels, highlighted key terms, or critical passages recorded on audio tape may make the difference in whether or not students even have the opportunity to learn. The use of individualized instruction must be deliberate and directed toward helping all students master the curriculum content.

INDIVIDUALIZING GROUP INSTRUCTION: A CASE STUDY

The following illustration of a secondary English course serves as an example of how regular teachers might individualize a group lesson. Note how the teacher individualizes instructional areas such as presentation, selection

of materials, and evaluation, based on an assessment of individual needs within the group.

Task. The tenth grade curriculum guide calls for a study of the short story form. During the two-week unit, the elements and various forms of the short story will be studied. The teacher also chooses to use the short story unit as a vehicle for developing group discussion skills. To achieve this end, the teacher usually provides students with sets of questions that focus on all dimensions of the short story. At the end of the unit, students must complete a paper in which they analyze a short story.

Student needs. The teacher is aware that within the class group are several students with reading and conceptualization difficulties. Other students need to have adjustments made to meet their learning style needs in the auditory and visual modalities. There are also two students who have difficulty staying on task and one whose emotional problems often become manifested in loud verbal outbursts whenever the pressure to achieve becomes too high.

Instruction. Several general considerations will form the basis for the teacher's instructional planning. For example, the teacher's most immediate concern is whether all students will be able to process enough print to achieve a modicum of success with the task. It appears that some students in this group will need assistance in both decoding and comprehension. In addition, some structured activities must be planned for those students who have difficulty with independent work. Enough instructional variety must also be introduced to maintain interest and motivation within this diverse instructional group.

To provide the motivational springboard for the unit, the teacher decides to use a filmed version of a famous short story. The use of media provides a focus which all students need, but particularly aids those students with conceptualization problems. The multi-modality presentation also assists students who may be limited in one modality. Further, the commercial appeal of media may reduce off-task behaviors by providing a high-interest stimulus.

When the teacher moves into a lecture concerning the elements of the short story, both the blackboard and the overhead projector are used to illustrate major points. For students with short attention spans, conceptualization difficulties, and auditory perceptual limitations, the visual presentation will direct their attention to key verbal points. Further, use of the overhead allows the teacher to observe students who may be straying off task.

Aware that many students have problems that are reading-related, the teacher makes several decisions. First, it is decided that the anthology will be supplemented by one or two short stories read aloud to students. In addition,

several stories are put on audio-tape so that students may listen to them during their free time. High-interest stories written at a lower reading level are also made available to students, and study questions are prepared for each story. The teacher also chooses to discuss key vocabulary and concepts prior to assigning the readings.

During class discussion, the teacher directs several simple, literal-level questions to students with poor reading and conceptualization skills. "You" questions which help relate the material to students' lives also are used to involve those who have a negative attitude toward school and learning. Calling on students to answer questions in a random pattern may keep some students from wandering off task.

Since a short written paper is expected of all students, the teacher makes certain that its purpose, format, and content are understood. Directions are presented in both the visual and auditory modalities. The reading level of all written directions is analyzed.

To help students conceptualize the format and content of the paper, examples of papers from previous classes are made available. For students who have difficulty organizing the paper, the teacher may need to provide additional structure. For example, rather than assigning the entire paper, its component parts could be assigned at varying intervals, e.g., the outline for the paper will be due in two days; the introduction consisting of two paragraphs will be due in four days; etc. Using this sequenced approach, the teacher builds in reinforcement to help students stay on task and in addition, is able to monitor those students who may have motivation difficulties. During independent work time, the teacher works with small groups of students to share and develop ideas. Tape recorders are made available for students who have difficulty writing or who prefer to work in the auditory mode.

All students in this scenario can succeed because the teacher has made their success the primary objective. The teacher analyzed the task, considered the needs of the students, and then made instructional adjustments when selecting materials and modes of presentation.

IMPLICATIONS

Many teachers have resisted demands to create flexible learning environments at the secondary level because they view individualization as both inappropriate and impossible to implement. However, as long as teachers insist upon presenting content with no attention to the learning implications of their instructional methods, a large number of their students will continue to fail. Secondary teachers no longer have the luxury of failing students who cannot learn content by means of the particular instructional methods used.

A key distinction regular secondary teachers must make is that between content mastery and instructional mastery. In other words, which is more important: that the student learn the material; or that the student learn the

material in a particular way? For example, when several students need additional time to complete an exam, the teacher must determine if the teacher-decided time limits for the task are a true criterion for mastery or merely arbitrarily imposed. Or, when a number of students need additional instruction, it must be determined if the extension actually increases a student's chances for content mastery or results in a "watering down" of the curriculum. Teachers must view the goal of instruction as more than just presentation of content: the content also must be received.

The special education model of individualizing instruction to ensure content mastery has much to offer regular secondary education. Special educators can assist their regular education colleagues by generating innovative, practical strategies for meeting individual needs within large-group settings. By analyzing the task and considering the collective needs of students, regular teachers can plan instruction to accommodate a variety of individuals within a large-group setting. Further, by tailoring instruction to a particular group, teachers can achieve the objective of content mastery by the group and minimize the need for one-on-one help for individual students.

The notion of individualizing instruction for only one or two "special" students must be discarded, while the notion of individualizing instruction for a particular group must be affirmed. Mainstreamed handicapped students no longer can be denied the experience of learning with their peers. With appropriate instruction, regular secondary teachers can ensure a successful experience.

REFERENCES

Wiederholt, L., & McNutt, G. Assessment and instructional planning: A conceptual framework. In D. Cullinan & M.H. Epstein (Eds.), *Special education for adolescents*. Columbus, OH: Charles Merrill, 1979.

Zigmond, N., & Sansone, J. What we know about mainstreaming from experience. In P. Bates (Ed.), *Mainstreaming: Our current knowledge base*. Minneapolis: National Support Systems Project, 1981.

Socialization as a Goal of Mainstreaming

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How one defines mainstreaming may suggest the value orientation of the definer. Some teachers and administrators, responding to the various pressures one experiences in public education, see it in terms of further demands made upon inadequate resources. Others, perhaps because of their successful experience in integrating special students into traditional classrooms, view it in a positive vein—as an opportunity for American public schools to become the institutions that embody the American dream. Contrast the hostility against Public Law 94-142 spoken by the unknowing and afraid with the rationales for the legislation identified by Herlihy and Herlihy (1980). They argue that separate facilities for the handicapped are as inappropriate as separate facilities for other minorities. They also note that education is a right of every American and physical barriers present in educational buildings deny that right. Herlihy and Herlihy see mainstreaming as benefiting all children since a classroom of handicapped and nonhandicapped students is representative of the real world. Further, the presence of handicapped children can motivate educators to go beyond the classroom walls and examine and evaluate their community. The law promotes advocacy, it promotes involvement, and that is the essence of citizenship.

Note that Herlihy and Herlihy, prominent social studies educators, begin with a clear statement of the rights of the handicapped and conclude by arguing that mainstreaming provides a benefit to all students, as the process makes it possible for the classroom to become a laboratory where American principles can be practiced and developed. Social studies educators such as Ochoa and Shuster (1980) and Shaw (1981) also see mainstreaming as an opportunity to achieve the goals of citizenship education.

The belief that mainstreaming is a benefit to all children and not merely a means of improving the academic growth of handicapped children is shared by other educators. For example, Johnson and Johnson (1981) in their definition of mainstreaming quite literally underscore its social aspects:

> Mainstreaming may be defined as the provision of an appropriate educational opportunity for all handicapped children in the least restrictive environment, based on individualized educational plans, with procedural safeguards and parent involvement, and **aimed at providing handicapped students with access to and constructive interactions with nonhandicapped peers** (author's emphasis). (p. 143)

Also Lucas (1982) notes that:

> Sometimes, proponents argue, the overarching aim of regular classroom placement for as many handicapped children as possible is not so much to facilitate **academic** achievement as it is to secure their **social acceptance** by nonhandicapped peers. (p.23)

Birch (1981) uses the term "social interaction mainstreaming" to describe the "mingling of exceptional and other children so they have many opportunities to get to know each other as persons and to engage in common social relationships of children and youth" (p. 36). According to Birch, this kind of mainstreaming goes well beyond the placing of students in the same physical plant.

While educators agree that social integration is an important aspect of mainstreaming, the literature indicates that it is a difficult goal to achieve. According to Zigmond and Sansone (1981), "social mainstreaming takes place when handicapped students are integrated into the social system of the school and they develop friendships with their nonhandicapped peers. This form of mainstreaming is harder to accomplish than physical or recreational mainstreaming" (p. 98). In fact, studies indicate that placing handicapped and nonhandicapped students together does not necessarily produce the desired objectives of socialization (Lucas, 1982). The risks involved are indicated by Hewett and Forness (1977). They note that handicapped children often experience negative reactions from others. It appears that the greater a child's handicap the more likely it is that he or she will have a negative social experience. These negative experiences can produce undesirable effects on a child's self concept. Thus, commendable as the goal of socialization can be for the handicapped and those not so labeled, it appears that placing children together, in and of itself, does not insure acceptance or the development of appropriate attitudes toward the handicapped.

BARRIERS TO SOCIALIZATION

If one accepts socialization as a valid goal of mainstreaming, it seems important to ask why it is such a difficult goal to achieve. In other words, what are some of the impediments to children being accepted for themselves? Two major impediments appear to be parental and teacher attitudes.

Parental attitudes. Mainstreaming is integration. It is the introduction of children who are perceived as different into traditional school settings. Most parents are suspicious of change. The basic criterion which they employ in evaluating change is: "How will this affect my child?" Concern about the impact of mainstreaming is shared by two groups of parents. Zigmond and San-

sone's (1981) research indicates that some parents of nonhandicapped as well as parents of handicapped children fear the effects of integration.

That parents can be a barrier to socialization was confirmed by the author in a recent series of interviews with faculty members of Glendale-Feilbach Elementary School, Toledo, Ohio Public Schools.[1] The author asked Glendale-Feilbach teachers the following question: "After three years of mainstreaming, what has been the major problem in producing social integration?" The teachers invariably responded: "Parents." The fear that their child would "lose out" in the process of integration was a concern of parents of both handicapped and nonhandicapped children.

And yet the Glendale-Feilbach experimental program did bring about change in parental attitudes. For example, if funds were not available to use a school bus for a field trip, mothers of nonhandicapped children learned how to pack wheelchairs and braces into station wagons. According to Glendale-Feilbach teachers, the concerns of parents were effectively eliminated as the months passed. The only parental concerns that were expressed in the last year of the experimental program were those of parents who were new to the program.[2]

Teacher attitudes. Teachers in the Glendale-Feilbach program noted that teacher attitudes also have the potential of delaying the social integration of handicapped and nonhandicapped students. The delay in socialization can occur if a classroom teacher prejudges a child based upon a stereotyped or false image of the child's handicap. For example, Baskin and Harris (1977) report a study of library practices indicating that librarians overload braille collections with insipid works. Also, the belief persists among many nonhandicapped persons that if one is blind, one's hearing is impaired; or if one has a serious physical disability, one is also retarded.

Thus, before teachers can successfully promote socialization in a mainstreamed classroom, they must first deal with their own attitudes toward handicapping conditions. Glendale-Feilbach teachers suggested that to facilitate mainstreaming, teachers with no special education experience

[1]The Glendale-Feilbach School was built in 1976 to accommodate the students and faculty of two schools which had been declared obsolete. One had been a traditional elementary school, and the other had been a school for severely physically handicapped children. The architect for the new building was directed to plan a facility which would permit the integration of severely handicapped and nonhandicapped students in classrooms. In order to promote socialization, the special education units were funded as experimental units. They were experimental in that the special education staff taught both handicapped and nonhandicapped children. Special education teachers, in addition to teaching an integrated group of children, also served as consultants to regular education teachers.

[2]The experimental designation of the school has since been eliminated. At this time the special education staff is not permitted to instruct nonhandicapped children.

should spend time talking informally with special education colleagues and observing handicapped children in an academic setting. Prior to the construction of Glendale-Feilbach School, the faculty of Glendale School visited Feilbach School, where severly handicapped children were assigned. Teachers not having special education certification observed instruction, volunteered to serve as teaching aides, and ate lunch with the special education staff.

It appears that the goal of social interaction mainstreaming was achieved at Glendale-Feilbach during its three-year experimental program. Teachers reported overhearing student conversations indicating that birthday parties, slumber parties, and other out-of-school activities included handicapped and nonhandicapped children. On occasion, in the school, unanticipated and unapproved integration occurred in the form of chariot races. A chariot race is two children in wheelchairs being pushed by two other children. It seems that children forget rules of safety when having fun with their friends.

PROMOTING SOCIALIZATION IN THE CLASSROOM

Teachers who become knowledgeable about the capabilities of handicapped children and who have parental support for mainstreaming still face a formidable task in trying to bring about social interaction mainstreaming in their classrooms. That negative attitudes persist toward the handicapped is substantiated by a rather disturbing study cited by Baskin and Harris (1977) in which only 79 percent of the respondents indicated they would be willing to have an amputee as a friend; only 65 percent would consider a person who stuttered as a pal; and only 38 percent would have a friend with cerebral palsy. Fortunately, teachers have available to them a variety of resources which they can use to help their students overcome the barrier of stereotyping and confront misinformation about handicapping conditions. Resources also exist which will help facilitate communication between handicapped and nonhandicapped students.

Eliminating the Barrier of Stereotyping. Baskin and Harris (1977) have studied the depiction of disabled people in children's books. Their findings, which include individual evaluations of children's books from 1940-1975, suggest that children's books have played a role in creating stereotypes about the handicapped. Their work would help teachers determine if books in the classroom library are part of the problem or part of the solution.

Another, different approach to the elimination of stereotyping is to involve children in identifying prejudgments. Barnes, Berrigan and Biklen (1978) have provided teachers with an excellent resource for this approach. Their work, a series of descriptions of learning activities, includes a number of suggested lessons in which children identify stereotypes about the handicapped. An example of such an activity is: "50 STEREOTYPES." The children are given a list of words and are told to put them in either a column entitled "Handicapped" or one entitled "Non-handicapped." Among the words are : "Likes sports," "Brave," "Polite," "Cries," and "Serious."

Following the placement of words in one or the other column, the teacher discusses what the word "stereotype" means.

Effective as this activity may be, students may feel deceived, hurt or angry when the teacher informs them that using such words as appropriate descriptors of the handicapped is considered stereotyping. Given the probable response of the children, it might be appropriate to capitalize on the students' frustration by showing the similarity of their feelings to the feelings of handicapped children when it is assumed that they "don't like sports," are "serious," or "cry."

In another activity from Barnes et al.'s work, children are provided with a sample questionnaire for interviewing relatives, classmates, and neighbors who are handicapped. The authors also explain ways in which children can learn to spot stereotyping by evaluating the treatment of the handicapped on television, in advertising, as well as in children's books. Examples of questions provided to the children for evaluating books suggest the value of such an activity:

> Is the disabled character always being helped rather than helping?
> Is the disabled person shown as being sad most of the time?
> Is the disabled person portrayed as bumbling and not skillful?
> Like Mr. Magoo? (Barnes et al., 1978, p. 64)

Teachers should also be alert to the possibility that basal textbooks are promoting stereotypes of the handicapped. The publication, *Guidelines for Selecting Bias-Free Textbooks and Storybooks* (Council on Interracial Books for Children), contains a chapter on the handicapped which directs teachers to look specifically at illustrations and storylines that promote prejudgment.

Confronting Misinformation. Given the tradition of isolating handicapped students and the stereotypes promoted by the media, many children do not know much about being handicapped. Unless misconceptions about the handicapped are corrected, the teacher is allowing a needless impediment for acceptance to exist. As a result of Public Law 94-142, professional organizations and publishing houses have produced a number of outstanding books that provide teachers with information about the handicapped; and equally important, the books provide teachers with methods of teaching nonhandicapped children about having disabilities. Many helpful activity books are available. Bookbinder (1978), Cashdollar and Martin (1978), Hawkins-Shepard (1978), Herlihy and Herlihy (1980), Ochoa and Shuster (1980), Shaver and Curtis (1981), and Stolte (1978) have written extremely practical works which can help the classroom teacher teach what it means to have a disability. The activity books are not restricted to merely imparting information about handicaps; their strength is that they focus on a more important objective, well stated in the subtitle of Barnes, Berrigan and Biklen's (1978) classic: *What's the Difference? Teaching Positive Attitudes Toward People With Handicaps.*

Although there are variations of emphasis in the above books, most contain a variety of simulation activities which enable children to acquire a sense of what it means to be sightless, have a loss of hearing, and/or live in a world of physical barriers. Activities and questions which facilitate student discussion of their understandings and attitudes about the handicapped are common to these books. Individuals and organizations are also listed as sources of information for students, and the authors include lists of recommended trade books in which handicaps are explained or the main character is handicapped.

Facilitating Communication. Assuming a teacher is successful in confronting the problems of stereotyping and misinformation, the next step would be to promote communication. Teachers at Glendale-Feilbach reported that the formation of "Citizenship Groups" (Ahern & Lucas, 1976) prior to and during mainstreaming was a most effective technique in facilitating communication among students. According to this technique, the classroom is divided into small groups, with each child assigned to a group. Each group is then assigned a time period to work with the teacher. While the other children are involved in tasks that do not need direct supervision, the teacher meets with a small group and encourages students to express concerns or problems related to themselves or the class. The concept is similar to the Teacher Advisor Groups developed by the Wisconsin Research and Development Center (Nussel, Inglis & Wiersma, 1976) or the Magic Circle Program, although in the latter example the initial content of the group meetings is specified by the program's creators (Bessel & Ball, 1974).

The use of Citizenship Groups, or any model that facilitates the articulation of unspoken fears, provides the teacher with an opportunity to hear and respond to questions which children may have about the handicapped. Further, Elovitz (1981) argues that the creation of such groups promotes socialization: "A teacher can use many activities to enhance acceptance in the classroom; the most effective strategies encourage children to express their feelings in an empathetic group, usually made up of peers" (p. 48). Glendale-Feilbach staff members reported that prior to mainstreaming, the Citizenship Groups did cause students to explore what they understood about being handicapped. And once handicapped children were added to a group, the nature of the group changed. It became a new group as the handicapped children were soon accepted.

A SOCIALIZATION CURRICULUM

Important, helpful, and necessary as it is to promote socialization by eliminating stereotypes about the handicapped; by teaching children about disabilities; and by facilitating the sharing of children's experiences, obstacles to socialization will still remain. Hewett and Forness's (1977) review of the literature indicates that disabled children exhibit a basic insecurity in social relationships. No doubt, as Hewett and Forness note, the handicapped child's insecurity is influenced by phenomena such as how others respond to the handicap, how the child interprets this response, and conflicts between

what the child wants to do and what he/she is physically or mentally able to do.

A mainstreaming experience conducted by a sensitive teacher may reduce some of the handicapped child's social insecurity; however, a teacher committed to socialization should be encouraged to go beyond resources that focus on mainstreaming and review the resources that focus on the skills of socialization. There may be some students with or without physical disabilities who do not need to know how to become a friend, or how to become a better friend; but all of us could probably benefit from a greater understanding of how to establish, develop, and improve relationships. In other words, what is it about some people that cause others to like them? What kinds of things does one do to promote a trust relationship with another person?

Curriculum materials which teach about the skills of socialization are limited, but what is available should be considered. For example, American Guidance Service has pioneered the development of curriculum materials in this field. DUSO (Developing Understanding of Self and Others, 1974) is a source strongly recommended for the young child. This program has existed for almost a decade and has been revised based on the experiences of classroom teachers. The producers have recently developed additional material for older students. Also, Quest, a program designed for middle school students, promotes dialogue about significant issues including peer acceptance (Little & Green, 1978).

Less structured and also much less expensive are the various idea or activity books found in the teacher bookstores that have been established in most cities. Most teacher idea books that deal with the promotion of student self concept include activities to help students become aware of what it means to be a friend. Popular examples of such works are: *Self Esteem: A Classroom Affair* (Borba & Borba, 1981); and *100 Ways to Enhance Self Concept* (Canfield & Wells, 1979).

SUMMARY

Classroom teachers must not view mainstreaming in its most narrow context. If mainstreaming is seen merely as a legal mandate which results in the addition of another student to the classroom and the construction of an "IEP," then educators have lost an understanding of one of the foundations of the American public school system.

We are a diverse society. Our roots vary. Within individual families there are traditions maintained whose origins come from different continents. In America, we worship God in different ways or we choose not to worship. Our diversity is greater than the origins of our family or our religious practices; we are a culture whose ethos is centered around individual rights. Because of that diversity, our schools must be committed to teaching children to accept differences in appearance and behavior. If this society is to

survive, its schools must teach children to reach out to one another and judge not that which is visible, but that which is significant.

REFERENCES

Ahern, J.F., & Lucas, N. *Ideas: A handbook for teaching elementary social studies.* New York: Harper and Row, 1976.

Baskin, B.H., & Harris, K.H. *Notes from a different drummer: A guide to juvenile fiction portraying the handicapped.* New York: Bowker, 1977.

Barnes, E., Berrigan, C., & Biklen, D. *What's the difference? Teaching positive attitudes toward people with disabilities.* Syracuse, NY: American Institute for Research and Syracuse University, 1978.

Bessell, H., & Ball, G. *Methods in human development.* La Mesa, CA: Development Training Institute, 1974.

Birch, J.W. *Variables in exceptionality.* Minneapolis: National Support Systems Project, October, 1981.

Bookbinder, S. *Mainstreaming: What every child needs to know about disabilities.* East Providence, RI: Easter Seal Society of Rhode Island, 1978.

Borba, M., & Borba, C. *Self esteem: A classroom affair.* Minneapolis: Winston Press, 1981.

Canfield, J., & Wells, H. *100 ways to enhance self concept.* Englewood Cliffs, NJ: Prentice Hall, 1979.

Cashdollar, P., & Martin, J. *Kids come in special flavors . . . understanding handicaps.* Dayton, Ohio: Kids Come in Special Flavors Co., 1978.

Council on Interracial Books for Children. *Guidelines for selecting bias-free textbooks and storybooks.* New York: Council on Interracial Books, undated.

DUSO: Information about DUSO (Developing Understanding of Self and Others) and related programs is available from American Guidance Service, Publisher's Building, Circle Pines, MN 55014.

Elovitz, G.P. *Improving the handicapped student's self-concept: Classroom strategies.* Washington: National Education Association, 1981.

Hawkins-Shepard, C. *Making it work.* Reston, VA: The Council for Exceptional Children, 1978.

Herlihy, J.G., & Herlihy, M.T. *Mainstreaming in the social studies.* Washington, DC: National Council of Social Studies, 1980.

Hewett, F.M., & Forness, S.R. *Education of exceptional learners.* (2nd ed.). Boston: Allyn and Bacon, 1977.

Johnson, D.W., & Johnson, R.T. Organizing the school's social structure for mainstreaming. In P. Bates (Ed.), *Mainstreaming: Our current knowledge base.* Minneapolis: National Support Systems Project, 1981.

Little, R., & Green, K. An overview of Quest. In H. Kirschenbaum & B. Glaser (Eds.), *Skills for living.* Findlay, OH: Quest, Inc., 1978.

Lucas, C.J. The mandate for equity in education: Another challenge for foundational teacher preparation. In M.C. Reynolds (Ed.), *Foundations of teacher preparation: Responses to Public Law 94-142.* Minneapolis: National Support Systems Project, 1982.

Nussel, E.J., Inglis, J.D., & Wiersma, W. *The teacher and individually guided education.* Reading, MA: Addison-Wesley, 1976.

Ochoa, A.S., & Shuster, S.K. *Social studies in the mainstreamed classroom K-6.* Boulder, CO: Social Science Education Consortium, 1980.

Shaver, J.P., & Curtis, C.K. *Handicapism and equal opportunity: Teaching about the disabled in social studies.* Reston, VA: Foundation for Exceptional Children, 1981.

Shaw, T. (Ed.). *Teaching handicapped students social studies: A resource handbook for K-12 teachers.* Washington: National Education Association, 1981.

Stolte, J.B. *Clarification of P.L. 94-142 for the classroom teacher.* Westerville, OH: Linc Services, Inc., 1978.

Zigmond, N., & Sansone, J. What we know about mainstreaming from experience. In P. Bates (Ed.), *Mainstreaming: Our current knowledge base.* Minneapolis: National Support Systems Project, 1981.