

A New Perspective in Teacher Education: The Neuroeducator

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There is much research yet to be completed in the field of learning disabilities before we can move with the assurance that we are on the correct path. However, research with groups of so-called children with learning disabilities is well nigh impossible to complete with any sense of accuracy due to variations in definition and the multiples of uncontrolled variables that exist between and among two or more children. It is my considered opinion that a significant breakthrough in research would occur by following the developing concepts of single-subject research, but that too has its advocates and opponents. Regardless of the lack of research, some of us have had nearly 45 years of experience with learning disabled children, experience which for long periods of time has brought us into daily contact with these children in small groups or as individuals. It is, without question, possible over this span of time and with this clinical psychoeducational experience to be able to make generalizations that are valid and that are appropriately inherent in the core of the problems we face. I do not apologize for the lack of basic educational or psychological research. Most of what ap-

pears in journals is worthless because of the impossibility of controlling variables within children and within teachers or others who work with them. It is possible to speak definitively from the point of view of theory that has grown out of more than four decades of intimate contact with these children.

TWO LEVELS OF TEACHER EDUCATION

I propose to reach my goal of teacher education for the neuroeducator by first addressing two other levels of teacher education. To place them in order of comment does not necessarily imply that one has a higher priority than another. All are necessary within any good school system. In part, I write to three levels of teacher education for the sake of completeness, as well as for the sake of recognizing that not all children or adolescents with learning disabilities need the same thing.

The Teacher of the Regular Class

The general classroom teacher is in a terrible plight as we enter the decade of the 1980s. Public Law 94-142 has done a

disservice to many regular education personnel, to say nothing of the many children placed in a normalization setting. The law was implemented too quickly, without teacher education centers or public schools having sufficient time to prepare either teachers in-service or new pre-service teachers who were then and are now in college and university teacher education programs. There is so much inertia in teacher education programs that decades could pass before realistic curricula will be developed to meet the needs of PL 94-142. University and college faculty members often times have never read the bill, since they assumed it did not apply to them. This is still the case in numerous instances. We do not, however, speak here to PL 94-142, although much could and will be said about it elsewhere in the near future. We speak of the fact of its existence and what this means to the average elementary or secondary school teachers—teachers who usually want to do a good job of teaching but who all of a sudden have been invested with one or more exceptional children about whom they know absolutely nothing. Oftentimes regular classroom teachers are literally afraid of exceptional children, including those with learning disabilities.

I do not propose to change the total nature of teacher education for the general classroom teacher. It is likely, however, that to do so would cause no harm, and indeed might well improve public and private education considerably. This, however, is not the point of this paper. What does the general classroom teacher need in order to adequately serve the child with learning disabilities? Recognize in this question that we are totally ignoring the teacher's needs insofar as mental retardation and physical and emotional disabilities are concerned.

In my opinion, the total issue of exceptional children could be handled by a well-conceived and well-taught course dealing with the psychoeducational needs of exceptional children in general. At Syracuse University during 15 of the 21 years when I was a professor there, all elementary and secondary teachers, all school-nurse teachers, all school psychologists, and most students of supervision and administration were exposed to a course entitled "The Psychology of Ex-

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ceptional Children.” This course often had as many as 300 students registered at one time. These were split into discussion groups of 25 students, each under the leadership of a select group of doctoral candidates in special education. The total group heard lectures and dialogues, and for these there were assigned the leading faculty members of the program. Lectures, discussions, films, readings, visits to clinics and to special schools, and classes comprised a rich three-credit-hour course for each student—a course taken during the junior or senior year of pre-service education. There is no question but that this was of intense interest, and ultimately of extreme value to the teachers as they moved into the public school systems of the various communities in which they were employed. Superintendents of schools began asking applicants if they had experienced our course, and hundreds of teachers later wrote back asking questions that obviously originated within the course. Thus, for all teachers, supervisors, school psychologists, and administrators, the program of study in every college or university should include a broad, general course on the psychological characteristics and educational needs of exceptional children of all types. However, general classroom teachers in practically all levels of the educational ladder must also have a survey course dealing with the psychoeducational characteristics and needs of children with learning disabilities.

On the assumption that only those children whose learning disabilities can be labeled “mild” will be placed into general education classes, the nature of the single course required of all teachers will more or less be in the nature of a survey. I say “more or less,” although I do not want that course to be a smattering of all points of view, i.e., an elective orientation. I will not quibble with respect to who is right or wrong in the education of learning disabled children. Irrespective of the orientation taken, I want the teacher to know something in depth regarding the learning needs of these children. I want that teacher to have sufficient background from a single course to be able to follow intelligently the advice of supervisors or learning disability specialists who may be and must be in the school system to serve in a

dynamic consultative role. This teacher will not be the specialist in the education of children with learning disabilities, but he or she must have sufficient understanding to obviate fears, to understand needs, to set a positive and realistic goal for the child within a realistic time-frame, to be able to individualize, and to have a thorough appreciation for the peculiar perceptual processing deficits that the child may demonstrate. If PL 94-142, poor as it is, is to be effective, then what we ask here of universities and public schools and state departments of education is, at the minimum, to be cogent.

For teachers, on-going in-service education within the allotted time of the school day must be provided until the entire professional staff of the school is oriented and has a common point of view: elementary teachers, driver education teachers, school nurses, science teachers, English and mathematics teachers, physical education and social science teachers, and administrators. The school principal should sit in the front row at every session. Unless the total school staff holds a common orientation to this problem, the efforts of the teacher of a normalization situation can be undermined almost immediately.

The Resource or Helping Teacher

In the resource or helping teacher we come to a higher degree of specialization. This is a master teacher who at a minimum holds a master’s degree with a specialization in the education of children with learning disabilities. Most colleges and universities with programs of teacher education for exceptional children have specialties for individuals with these interests. I have visited many such programs throughout the United States. I find most of them lacking both in terms of orientation to the problems and the quality of the professional staff. I also find most of them loaded with university or college core requirements that on the one hand protect the teaching position of those who teach the required but unrelated courses, and that on the other hand leave so little time for any decent specialization that the teacher must rely more on her innate wisdom than on new and fresh ideas that might have come from highly qualified university faculty mem-

bers. The master’s degree in the 1980s must be overhauled throughout the country; in its present form, it is antiquated, timeworn, passé, and like the dinosaur extinct insofar as it possesses any functional use outside of a museum.

The present master’s degree should provide at least the following as minimums: (a) acceptance following two years of experience with normal children (it will be a three-semester or a 12-month program); (b) a minimum of the required courses; (c) a general course in the psychology of exceptional children; (d) a survey course as described previously in the area of learning disabilities; (e) a course in the teaching of reading and spelling to children with learning deficits; (f) a course in the teaching of mathematics to children with learning deficits; (g) a course dealing with a specific methodology of education for children with learning disabilities, including concepts of interdisciplinary cooperation and function; (h) a course in perceptual processing deficits, concept formation, and the development of eye-hand coordination related to handwriting; (i) a course in consultation in order that the resource teacher may serve in a consultative role with general educators, administrators, and parents; (j) and finally, a six-month, full-time practicum experience under a master teacher with children who have learning disabilities—mild, moderate, and severe.

Most pupils assigned to a model resource room or to a helping teacher will possess what I term “moderate” problems insofar as severity is concerned; moderate can also be severe in terms of life adjustment. We could talk much about the nature of the resource room and the resource teacher. I find these situations lacking in quality in too many places. In some locations, but too few, the program is effective and the teachers are doing a fine piece of professional work. Our goal here, however, is to look at a new type of educator, and only this brief mention will be made of the needs of both the teacher of normalization situations and those of the teacher of resource rooms or helping situations. We include these brief discussions merely to recognize that differentiation in good teacher education is required of higher education.

THE NEUROEDUCATOR

The points to which we have written above, i.e., the regular classroom teacher's needs and those of the resource or helping teacher, have been included here essentially for background purposes and for the sake of completeness. Our essential goal leading from these two levels of teacher education is to consider the needs of the specialist in the field of learning disabilities, i.e., the leadership position within a school building or a school system: the neuroeducator. I prefer to think that in every large elementary or secondary school building there will be at least one if not more neuroeducators. This is the head teacher, the individual who sets the focus and is constantly alert to the nature and needs of all of the learning disabled children being served within the school unit. What are this person's needs and skills requisite to fully performing his or her leadership role?

The universities in which this type of person will be prepared do not in reality have a degree program specific to that explained here. It is possible that a second master's degree would serve the purpose, if the individual is intent upon seeking another degree. Since school systems often base salaries on the possession of degrees, this may indeed be an important consideration. In other instances the individual may move toward the completion of an intermediary step between the master's level and the doctorate, i.e., the educational specialist degree that is becoming more and more popular in some universities. Or indeed, building on either the master's degree or the educational specialist degree, the individual may decide to move toward the completion of the doctorate. More and more doctoral personnel are holding significant positions in public schools. Obtaining the doctorate would provide multiple employment possibilities either in the public schools or in positions in higher educational settings. The latter, of course, would negate some of the hopes for adequately prepared leadership persons in the public schools, but it would, on the other hand, provide much more sound teacher education in higher education than is now observable, if the individual chose that route.

The Preparation Program

The program of educational preparation for the neuroeducator is not a simple one. It must be recalled that with children who have learning disabilities, educators and others are dealing with one of the most complicated of all developmental problems. There is nothing simple about this issue, and it is definitely not a problem of remediation. To apply concepts of remedial reading or remedial arithmetic to the learning disabled often exacerbates the problem and certainly is not its solution. The education of children with learning disabilities is a problem of new learning beginning at the most primitive point at which a genuine success experience can be elicited. No remediation is involved; new learning is the keystone. (In large measure this same concept applies to the mentally retarded and certainly to those with cerebral palsy.) Based upon the general requirements of a master's degree, which I have previously described, what are the elements inherent in a sound program of preparation for leadership persons who will work with the learning disabled? The requirements are lengthy and complicated, but in my experience over the past 25 years, I am convinced they are adequate and essential. Furthermore, students who have been involved in this program and who have completed it later, almost unanimously, express their appreciation for having been given a base from which they can perform at a high professional level. In large measure the balance of this paper will consist of an annotated listing of what I perceive as the minimum experience the neuroeducator must have.

1. Learning disabilities are inherent within the human organism. They are not something external to it. This being the case, the individual must understand the totality of *human anatomy*. Whether this course is taken utilizing the cadaver and the anatomy laboratory, or whether it is a nonlaboratory academic course, I do not have great concern. Actually the former is better but not always possible. The essential issue is that the student gains an appreciation of the structure and operation of the human organism in its totality.

2. Since learning disabilities are, if correctly defined, neurological in nature, the student must have a solid course in *human neurology*, and thus be able to

understand the function of the neurological system. At the University of Michigan our students can participate for credit in a course in neuroanatomy offered by the Medical School faculty. It is a year-long program, outstanding in its instruction and in its content. Finally in this series, the student needs a course in human *neurophysiology*. This course should cover three aspects of physiology which itself is the study of the normal and vital processes of the human organism, namely, (a) the study of physiological processes in relation to the development of the embryonic and fetal stages of human growth; (b) the extension of physiological processes to the normal functions of the human being; and (c) that part of the science which pertains to anatomical (particularly neurological) lesions. These academic emphases will provide the student with the true basis on which adequately defined learning disabilities are founded. Learning problems resulting from emotional tensions, from poor initial teaching, or from other environmental or social factors are not learning disabilities as we are considering them here, nor as they have been conceptualized historically by the early leaders and founders of this area of educational effort. People who believe otherwise are getting their metatheses mixed! Learning disabilities, as we have defined them for more than four decades, are neurological in nature, and once we get that point of view fixed in the minds of those who work with these children, half the battle is won for the child and family.

3. We move now to a third fundamental issue in the preparation of the neuroeducator, namely, a basic understanding of *intelligence*. While the psychometric issues of intelligence are important merely as background, the educator at the level of which now we speak has undoubtedly been bored to death already with the table of intelligence classification, from idiot or severely retarded to genius. We need no more of this. I refer you to an old publication now. Although old, it yet is profound and strikingly new to those who may not have been exposed to it. I speak of Ward Halstead's small volume *Brain and Intelligence* (Chicago: University of Chicago Press, 1947). This volume appeared in the literature the same year as the famous volume by

Strauss and Lehtinen (*The Psychopathology and Education of Brain-Injured Children* (New York: Grune & Stratton, Inc., 1947), a volume which summarized the remarkable work of Heinz Werner and Alfred Strauss. Halstead, in the first section of his volume, speaks of the structure of biological intelligence. This places him in direct communion with Strauss and Werner, with me, and with others such as Kephart, Birch, Frostig, and those who are familiar with and know their neurophysiology. In his volume Halstead speaks of psychometric intelligence, clinical intelligence, and in particular, the neurological conceptions of intelligence. These are in essence chapter headings. More important he speaks of the central integrative field and function of intelligence, the power factor of intelligence, and the directional factor of intelligence, among other issues, all culminating in a word not in general use in 1947, i.e., the "nuclear structure of the ego." A semester-long course for advanced students on intelligence could be developed around the contents of this book alone. Primarily, however, this strand in the preparation of the neuroeducator provides him or her with a basic understanding of the nature of intelligence, a far cry from a classification system of I.Q. points. It provides solidity to the understanding of the child or adult, both normal and abnormal. This point of view is an absolute in the concept of the neuroeducator. It places intelligence within the specific neurological frame of reference, just where it should be.

4. We now come to a series of courses which also are fundamental and essential to the neuroeducator. We have tried and experimented with dropping one or more of these from the program of study, but finally we have concluded that all are needed unless duplicates have been experienced by the student in prior programs or in previous degree studies. The first of these is a basic course in perception. Since learning disabilities are fundamentally issues of perceptual processing deficits, the student must first know what perception itself is within a normal framework. Some would say this departs from the neurophysical approach which we feel is fundamental. Perception, however, involves nerve cells, nuclei, nerve endings, efferent and afferent nerves, and

brain tissue. Hence, perception is a neurological function. To understand perceptual processing deficits one needs to have a firm grasp on perception itself, something far more than Carl Sagan's disappointing single chapter in his book, *Broca's Brain!* (New York, Random House, 1980). From a good basis of understanding of perception, the student needs a sound course in each of the following areas: memory, learning, sensation, and cognition.

Memory deficits are legion in children and youth with learning disabilities. To understand deficits, one must first understand normal memory development. The *psychology of learning* is absolutely essential. Most students have experienced a course in the psychology of learning, and usually nothing could be duller. Learning of all types is conditioning, and a course going back to the original writings of Pavlov through Guthrie and others of more recent years can be one of the most exciting experiences of a student's life. Experiments in conditioning can become illuminating. Relating conditioning to the need for repetitive instruction in the learning disabled child can be and must be challenging and exciting to the learner. This is real education and real teaching.

Cognition is another fundamental. It is interesting to me that even the term cognition is rarely heard in undergraduate education preparation courses. Most languages have a word with the root stem of cognition which is basic to everyday conversation; in Spanish, for example, one hears many times a day the word *conocer*, to know. Cognition is closely related, for within this term the individual comes to know and to be able to understand the act of knowing, including both awareness and judgment, both of the latter elements characterizing the daily discrepant activities of the child with learning disabilities. Only by knowing the normative processes of cognition can the educator truly understand those which are the result of perceptual processing deficits.

In the course concerned with perception, the student will have become familiar with both the psychological and anatomical aspects of visual, auditory, tactual, and other aspects of perception involving the other sensory modalities. In a course dealing with the psychology of *sensation*, these earlier leanings, (per-

ception and neurophysiology) become more real as the student learns about levels of awareness, about learning as the result of bodily stimulation, states of excitement (related to hyperactivity), and the causes of these states. In toto, perception, memory, sensation, and cognition are all important aspects of learning. Together they provide a fundamental focus and understanding of the problems of atypical learning which are so characteristic of the child and youth with learning disabilities.

5. An area of teacher education and program development around which there is some controversy is that of *movement education*. Called by any other name, such as perceptual-motor training, the conflict still exists in the minds of some. As we have written elsewhere, we do not and have not ever stated that there is a one-to-one relationship between perceptual-motor training and reading, spelling, handwriting, or arithmetic competencies. From our clinical observation, however, there is a very real relationship in many children with learning disabilities between their motor deficiencies and their self concepts. We continue to advocate, in the absence of any accurate research to the contrary, that movement education is important in terms of enhancing the child's ego strength, his satisfaction with self in being able to accomplish specific skills, and that this growth has a direct or indirect carry-over insofar as motivation is concerned into the more abstract aspects of learning which we have just mentioned. It is for this reason we recommend, and indeed insist, that our advanced students experience a sound program of orientation to perceptual-motor training, its advantages on the one hand, and its unfounded claims or disclaimers on the other, and be able to appropriately integrate such a program into the overall schedule of the child. We have for years included approximately 25 minutes per day of such training in the program of both learning disabled children at the elementary school level and youth who need it at the junior and senior high school levels. Without question, it has proven itself most beneficial in the manner herein described. Regardless of the outcome, a neuroeducator must know the two sides of this question and who it is that is advocating what!

6. We come now to a lengthy list of additional course requirements which the neuroeducator in learning disabilities must have in order to do a leadership piece of work. I want our graduates to have experienced a fine course in the area of *speech communication* in individuals with central nervous system involvements. Derek Sanders of the State University of New York at Buffalo (*Auditory Perception of Speech*: Engelwood Cliffs, Prentice-Hall, Inc., 1977) has written a splendid volume on the relationships of auditory perception and speech. Lencione, writing in the area of cerebral palsy, has likewise provided a fine chapter on organic speech problems (R. Lencione, "The Development of Communication Skills," in W.M. Cruickshank (ed.) *Cerebral Palsy: A Developmental Disability*. Syracuse: Syracuse University Press, 3rd edition, 1976, Chapter 6, pp. 175-222). The entire visual and auditory perceptual processes come together in communication, and educators must know this relationship in order to serve adequately children with learning disabilities. Closely related to speech and communication is the field of linguistics. Some authors include the issue of psycholinguistics in a definition of learning disabilities. Here, instead of merely assisting the child in the development of the act of talking and the creation of well-understood speech, the emphasis is on the structure of speech, modification of language, and meaningful units of speech, i.e., morphemes, words, and sentences. Aspects of linguistics overlap with the field of philology, and leadership personnel need to know these relationships in order to serve children adequately.

It goes without saying that leadership personnel must have basic courses in the teaching of reading, writing, handwriting, spelling and mathematics which are aimed directly at the child or youth with learning disabilities, how to make use of the undergraduate or masters degree programs, basic courses in these subject-matter fields have been completed. If not, there are some prerequisites to get out of the way! We will not here go into the details of these instructional areas, but the neuroeducator and the teachers themselves must understand how to diagnose specific reading or mathematics

disabilities, what instruments to use, and to have a sufficient background, especially in reading, to be able to select a method of choice for instruction in specific areas of disability. (Cf. W. Cruickshank, W. Morse, and J. Johns, *Learning Disabilities: The Struggle from Adolescence toward Adulthood*. Syracuse: Syracuse University Press, 1980, chaps, 10-13, incl.)

Child and Adolescent Development and the *Psychology of the Learning Disabled Child and Adolescent Development* are essential competencies which must be assimilated by the neuroeducator. It is assumed that the former will have been experienced much earlier in the professional training of the individual; if not, it is mandatory now.

This is a long recital of things which the neuroeducator must know, and we are not finished yet. We will try to abbreviate somewhat more than we have previously. It is my considered opinion that these leaders in the education of children with learning disabilities must have a thorough understanding of the issues of *emotional disturbances* in learning disabled children and youth. It is rare indeed that we have ever seen a child or adolescent with learning disabilities whose life is not also confounded by emotional disturbances, sometimes superficial, but most times deep-seated. This situation is usually due to the life-long history of failure which the learning disabled young person has experienced. These problems must be dealt with before effective teaching can be successful. There must be a simultaneous thrust on two significant problem areas, emotional disturbances and learning disabilities, by professional people and especially educators. Educators have more contact hours with the child than all others, save the parents.

I want leadership personnel, administrators, teachers, and parents to be comfortable in teaching young people with learning disabilities, how to make use of *crutches*, or better stated, learning aids. Hand calculators, home computers, Talking Books, the use of human readers, counting on fingers, and the wide variety of other homemade or technological crutches that are now commonplace. When the child understands the concept behind a mathematical process, there is no reason whatsoever why he or she

should not be permitted to use a hand calculator, particularly, for example, in multiplication problems when there is also present a memory deficit. Section 504 of the Rehabilitation Act is sufficiently liberal in its interpretation to permit the employment of readers, for example, for high school and college youth who have accurately defined problems of dyslexia. These tools should be commonplace in the schools for all children.

Finally, there are two additional elements which are more or less interrelated. First, the neuroeducator must have experience in empathizing with parents, being able to inform parents accurately and fully about the learning problems of their children, giving them information about home handling of the child, as well as what not to do at home, and helping to motivate parents to address their child with encouragement and understanding. Parents must understand the value of structure, anticipating new situations in the home, and the necessity of repetition without anger with children who have learning disabilities. They must understand that for the present, sensory and/or motor hyperactivity, attention disturbances, and memory deficits, for examples, are a part of the "normal" behavior of the learning disabled youth. They must be helped to understand that the school can meet only half of the problem; the other half resides in a positive home program which extends that which is being done in school. The parents must be given the assurance that they will always be welcome at the school for additional conferences with the neuroeducator, and indeed may wish to participate in parent-education programs which should be planned and completed. We have also had the favorable experiences of including junior and senior high school youths in these parent-education programs.

Lastly, but equally as important as anything which we have thus far outlined, is the matter of continuing contact with a child or group of learning disabled children *throughout the pre-service program*. Every neuroeducator during the pre-service period must participate in the diagnostic process with a given child, must then tutor that child for a minimum of one hour per day (eventually being involved in all aspects of the educational

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Teachers in the classroom should not be expected to function as effectively as individual tutors for each child; nor should IEP policies and procedures require teachers to become tutors for each child in a group. When the handicaps of the children require such a role, each child receives approximately only an hour of real instruction in a full school day.

On the other hand, especially under these conditions, the value of immediate monitoring of the child's progress, made possible with IEP-directed curricula, is even greater than in other special education classes. Criteria permit rapid revisions of curricula to facilitate learning. In addition, the close monitoring possible with well-defined educational goals reveals early progress that reinforces the teacher's efforts with even the most disabled children. Thus, the beneficial effects of IEPs accrue not only to the children but also to the faculty. The resulting increase in morale will motivate teachers both to cooperate with IEP procedures and to reinvest in the education of difficult children. Educators enter their profession to fulfill a desire to help children to develop and grow. Nothing is more frustrating to that basic motivation than a child who apparently cannot learn. Demonstrating progress to faculty brings the deepest form of satisfaction and cooperation.

CONCLUSION

In summary, the application of IEPs in the classroom must work for the benefit of both teacher and child. The child benefits when policies and procedures for implementing and administering IEPs do not substitute clerical work for teaching; do not prohibit classroom methods and techniques of instruction that have been productive; improve education through revision of previous practices to meet the spirit and letter of the law; and tap the basic motivations of faculty members to engage in their profession.

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program from movement education to social studies), maintaining a daily log so that progress ultimately can be evaluated, participate in parent-informing conferences, and, if possible, working with a group of children or youths with severe learning problems. There is nothing which equals the direct confrontation of teacher and child. There the teacher learns the values of structure, both environmental, programmatic, interpersonal relationships, and structure in teaching materials. On a day-to-day basis, the teacher becomes comfortable with the positive aspects of structure, and feels at ease with the concept. There is little place for permissiveness in the education of children with learning disabilities. To make structure a tool of learning in the most positive sense is the goal, and it is easy to accomplish this with supervised learning experiences.

SUMMARY

We have stated that the education of children with learning disabilities is terribly complicated. The usual procedures followed in teacher education rarely accomplish what is necessary. A specialist in the true sense of that word is required. The personality of the future teacher and of the neuroeducator is as important as what we have described as a minimal program of preparation. It is essential that a distinction be made between children with learning problems and children with specific learning disabilities. While history has not proven the great success by educators with children who have learning problems resulting from psychosocial impacts of the environment, methods which school people use with these children may or may not be satisfactory. They, i.e., remediation techniques, are not satisfactory with children with learning disabilities when these learning deficits are the result of a diagnosed or presumed neurophysiological dysfunction. The issue of perceptual processing deficits, in order to be adequately addressed, needs a person who possesses a different type of educational preparation from that ordinarily provided for teachers. The neuroeducator, in the word itself, indicates a different subject matter and breadth of preparation such as has been described.

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