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ABSTRACT

The recent trend in special education toward individualized teaching based on the diagnosis of specific learning disabilities is reviewed. The concern of educators for emphasis on psychoeducational diagnosis to determine learning and behavioral problems, and their remediation, rather than primarily on classification and categorization along medical lines, is stressed. The role of regional instructional materials centers (IMC) information systems (sponsored by Bureau of Education for the Handicapped) in facilitating this trend is outlined. The Basic Indexing and Retrieval System (BIRS), an automated information system operated by the regional IMC at Michigan State University, is described. Reported is an experiment at that center to test information output. Of 56 learning ability skill terms used on a sample of 696 abstracts (approximately 20% of MSUIMC items) to generate descriptors, 37 generated one or more items to form a concordance. A frequency word analysis was carried out on these 37 terms, on the basis of which it was inferred that much material in the IMC is readily available in abstract form to be retrieved using learning ability terms. (KW)

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Implications for Bureau of Education for the Handicapped — Sponsored Regional Instructional Materials Centers Information Systems

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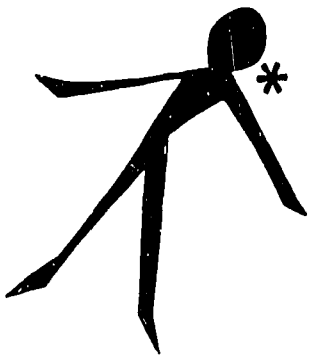

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INTRODUCTION

The purpose of this paper is to (1) review the recent trend in special education toward individualized teaching based on diagnosis of specific learning disabilities, (2) highlight the important role that BEH-sponsored regional instructional materials centers information systems may play in facilitating this trend, and (3) report on an experiment at the USOE/MSU Regional Instructional Materials Center designed to test the present information output with respect to retrieval of information of a specific, prescriptive nature to answer predicted questions of present diagnosticians and future master teachers.

The Trend Toward Individualized Teaching Based on Diagnosis of Specific Learning Disabilities

Terms such as individualization, programmed instruction, prescriptive teaching, systems approach, clinical teaching, and diagnostic teaching suggest a trend away from the physiological, medical, or psychologically based categories in special education which have jig-sawed children into compartments without consideration of each child on his own merits as an individual. The accelerating trend toward individualization is quite apparent in the field of special education, which has long advocated this approach.

In 1934 Laycock said, "The child must not be seen as a deaf child, a blind child, or a subnormal child. He must be seen as a whole. Every teacher must be a diagnostician."[1]

This view is given fresh impetus by Schwartz who advocates: "... teacher education curricula designed to prepare special educators for their rapidly evolving role as clinical and remedial specialists of learning and behavior disorders. . . . ."[2]

He goes on to state that preparation of such teachers should include: ". . . . selection and utilization of appropriate educational activities, technological equipment, materials, and techniques . . . . . a learning materials center equipped with technological equipment and a laboratory for the development of appropriate learning materials."[3]

The problems faced by teachers of multiply-handicapped children who cannot fit into a single category of handicap, serve to bring the problem of individualization into dramatic focus. In discussing the problem of

multiple handicaps, Hart recommended that teachers be prepared to remediate learning disabilities in order to help multiply-handicapped pupils overcome the problem of acceptance which they face in special education classrooms.[4]

More investigations are being conducted that cross disability categories:

"Perhaps most significant is the increase in research activities which cut across disability areas. Since handicapped populations tend to be defined in terms of criteria derived from physiological, medical, or psychological bases, this trend can be viewed as a positive factor. It indicates that researchers are finding that the classification systems derived from other disciplines are of limited use. Though these characteristics of handicapped populations may have educational analogues in many instances, the overall system is apparently inadequate to delineate clearly the problems encountered in an educational setting.... Research into the severe problems of language development in the deaf has been generalized to similar problems among children who are mentally retarded or have specific learning disabilities. Work on compressed speech, which originated in connection with the visually impaired, is now being investigated as a possible input system for a broad range of other types of handicapped children."[5]

This viewpoint is now emphasized by many educators: ".... labeling a child 'mentally retarded,' 'brain injured,' or socially maladjusted' does not necessarily suggest how the teacher can help him. Labeling has frequently been used as a excuse for failure to teach the child."[6]

Bateman makes the trenchant point that even if medical-neurological diagnosis is known: "...remediation must still be planned on the basis of observed behavior. .....whether one favors homogeneity or heterogeneity of grouping, a crucial consideration is that such grouping be based on relevant variables.... In the future this proliferation of programs will

perhaps reverse and be replaced by an integrating and unifying application of certain concepts which are now being explored and applied in learning disabilities."[7]

Tomorrow's technology may well bring about unification. The master teacher of tomorrow may more easily be able to work with many more handicapped children than currently served by one teacher. Special education in the near future will look completely different: "The special education classrooms will probably resemble the language labs of today. Desk consoles, study carrels, screens and buttons -- these individualized teaching-learning materials will crowd our rooms the way blackboards, desks and windows do in the schoolroom of 1968."[8]

It can be predicted that such master teachers, in addition to serving larger numbers of handicapped children, may be able to more easily handle a wider variety of conditions within their classrooms. Prescriptive teaching may then be a reality.

"Through a wide imaginative use of educational technology in a systems approach to education, handicapped children may be freed from the lockstep of traditional education and will be allowed to develop skills that are compatible with their performance."[9]

The systems approach (involving television, printing plant facilities, audio support, resource personnel, etc.) has been described by Freeman at an infantry training school where the instructor" .... has systems-engineered the instruction based on the student's job assignment, the duties that make up that job, and the tasks involved in those duties. Certain of these tasks have been selected for school training. Instructional objectives specify the desired student action, conditions, and standards of performance.

A criterion measurement situation has been designed with compatible or identical action, condition, and standard. Quality control provides feedback to evaluate each step of the process or project."[10]

A paper circulated by the Council for Children with Behavioral Disorders (CCBD) at the 1969 Council for Exceptional Children Convention indicates we are far from the goal. ". . . Professionals concerned with children produce schools which use labels which place responsibility for failure on the child, his parents, or on other factors unrelated to his school experiences."[11] The CCBD called upon the CEC to:

(1) Seek a definition of exceptionality that is educational in its origin and conception, and in its diagnostic and remedial implications.

(2) Strongly affirm the inadequacy of the traditional special education model of remediation, and actively affirm the need for the development of a new model that involves the total system and all children.[12]

The battle-cry of the CCBD at the convention became a dominant theme which perhaps expressed the mood of the entire convention and the need felt by teachers of the handicapped for a new model to reflect the changing viewpoint. The model must be concerned with psychoeducational diagnosis to ascertain specific learning and behavioral problems and their remediation, rather than one with a primary purpose of classification and categorization along medical lines.

The Role of BEH-Sponsored Regional Instructional Materials Center Information Systems

With the increasing trends toward individualized programs, educators may tend to seek more information and help in obtaining exact, specialized and specific tools and information to enable them to tailor instruction needs. A systems approach to education means that the IMCs must be " . . . tailored to meet needs of individual children and at the same time are broadly enough conceived to be applicable to large numbers of children."[13]

The BEH-sponsored regional center at Michigan State University operates a computerized system known as BIRS (Basic Indexing and Retrieval System), an automated information system adaptable to use in small libraries. How teachers use the IMC has been described by Weber:

> "I am looking for curriculum guides or materials at the primary (readiness) level that could be used in teaching mathematics to the educable mentally retarded child. What is available?"
>
> "The key words -- descriptors -- were: curriculum, primary (readiness), mathematics and educable. These words, fed into the CDC 3600 computer, produced descriptions of eighteen items of possible assistance to the teacher who wrote the letter. Any teacher who has a handicapped student or suspects that one of her students is handicapped can ask for assistance from the Regional Instructional Materials Center for Handicapped Children and Youth. The center, one of fourteen in the country, is a joint venture of Michigan State University and the U.S. Office of Education. It serves Michigan, Indiana, and Ohio."

"With 10 percent of the school age children in the country classified as handicapped (120,000 in Michigan alone), classroom teachers as well as professionals in the education of the handicapped are likely to encounter students with special educational needs. Until the formation of the center, now in its third year of operation, there was no central source to which the teacher could turn for information on the availability of special materials and techniques. Now, with a single request, the teacher has access to over 3,500 possibilities. In practice, she will receive information concerning only those fifty or fewer descriptions most relevant to her needs. In the example, the eighteen items described included fourteen professional texts on resources and methods, six curriculum guides, one reference reader, six materials for child use, and one piece of equipment for teacher use.

The information sent to the teacher varies with the type of item. In the case of a book, it would include title, author, publisher, publication date, number of pages and a description in 250 words or less of the content and purpose of the book. The Center does considerably more than provide the teacher with a list of available materials. The center has on hand at least one of each of the 3,500 items in the computer at present. If, after reading the computer abstract, the teacher is interested in specific items, she may again contact the center. If the item is an artifact, the teacher may come to the center and examine the artifact before deciding to purchase one for her own use."[14]

As it presently operates, the BIRS system has been programmed to retrieve items in such special education categories such as mental retardation, visually handicapped, crippled and neurologically impaired, rather than on specific learning disabilities. This has, and will continue to have, relevance for the teacher who needs information on specific skills and techniques applicable to a particular category -- braille or speechreading, for example. The trend previously discussed will, however, mean that a teacher will be more concerned with specific skill deficits of an individual child and will require information common to the categories of handicapping conditions. A deaf child, for example, may have deficits in the area of throwing or laterality or fine muscle-coordination; so may a blind or mentally retarded child as well as many "normal" children! Such information is presently available in the MSU Regional IMC under the conventional categories of special education and scattered through a wide variety of itemized materials.

What is sought, therefore, is a procedure whereby a teacher may draw upon information relevant to particular deficits. (Much of what is written and produced today for the categories of exceptional children has relevance outside that area. The concern is that the material must be readily available to all teachers.)

Is it possible to draw upon such information, much of which has relevance outside a categorized area? Could the present BIRS system be adapted to the growing need for information that cuts across disability areas?

An Experimental Procedure

In order to test the information effectiveness of the present output, a thesaurus of 56 terms was compiled from the 53 basic learning abilities operationally defined in Valett's "A Psychoeducational Inventory of Basic Learning Abilities." (This inventory is used for the initial evaluation of elementary and junior high school students who are thought to have learning disabilities. Samples of educational tasks are taken from the author's delineation of the 53 basic learning abilities.) The 56 terms were used on a sample of 696 abstracts comprising approximately 20 percent of the MSU IMC items. The abstracts were all in the general classification area of Special Education, covering a representative cross-section of document, curriculum materials, equipment, audio-visual and journal items.

The purpose of the experiment was to determine whether Valett's 56 learning ability "skill" terms could be used to generate descriptors from the abstracts presently organized at the MSU IMC.

Of the 56 terms (six basic types - gross motor development, sensory-motor integration, perceptual motor skills, language development, conceptual skills, motor skills) 37 generated one or more items to form a concordance (i.e. an alphabetized list of these terms together with frequency of occurence and the pertinent abstracts.) A frequency word analysis was carried out on the terms that generated items on the Concordance (see Table I).

TABLE I - FREQUENCY WORD ANALYSIS OF TERMS THAT GENERATED ITEMS ON THE CONCORDANCE

Abstract	24	Health	51
Abstracted	16	Jumping	1
Abstracting	2	Localization	1
Abstractly	1	Maturity	5
Abstracts	6	Memory	8
Acceptance	8	Number	154
Anticipated	1	Orientation	21
Arithmetic-Rela	1	Orientations	4
Articulate	1	Reaction	4
Articulates	2	Reactions	5
Articulating	1	Reasoning	2
Articulation	4	Rhythm	12
Attack	3	Running	2
Auditory	30	Self-Identification	1
Auditory-Visual	1	Sequencing	5
Balance	7	Skipping	2
Body	30	Spelling	58
Classification	15	Spellings	2
Classifications	5	Strength	4
Classified	6	Strengthen	6
Classifies	3	Strengthened	2
Comprehension	29	Strengthening	3
Comprehensive	28	Strengths	3
Dancing	1	Tactile	16
Decoding	1	Throwing	1
Direction	13	Time	58
Directional	1	Visual-Auditory	1
Directions	35	Visual-Motor	8
Eye-Hand	1	Vocabulary	59
Figure-Ground	2	Vocabulary-Discu	1
		Walking	5
		Writing	36

From this table it may be seen that the word "balance" generated 7 abstracts that include the term. The items cover various categories of exceptionality and include document, equipment, journal, curriculum and audio-visual items. Thus, many have applicability for teachers who are working with multiply-handicapped children and also for those whose approach is eclectic and who are willing to experiment with various approaches in the classroom.

Nineteen terms (crawling, dexterity, etc.) do not yet appear in the present MSU IMC thesaurus or abstracts and were therefore unsuccessful in generating abstracts for the Concordance. Abstraction was one of the unsuccessful terms, although it may be seen from Table I that 49 items were selected from the terms abstract, abstracted, abstracting, and abstractly. The key term in Valett's inventory, however, was body abstraction and none of these items applies to that particular ability.

Other terms, although not yet included in the thesaurus of keywords, generated large numbers of abstracts. For example, auditory-acuity generated 30 items from the term auditory -- some of which were found to be relevant to the auditory-acuity area.

On the basis of this frequency word analysis it may be inferred that much material in the MSU IMC is readily available in abstract form to be retrieved using learning ability terms. A great deal more could become immediately available if learning ability terms were added to the present thesaurus.

It is possible to up-date the 3,500 items in the MSU IMC catalog by the inclusion of learning ability terms. At present this could be accomplished by manually assigning descriptors and inserting them by hand in the descriptor file. (Normal procedure utilizes computer programs to select descriptors on a keyword matching basis when the keyword is included in both the thesaurus and abstract text. Obviously, if relevant words are not included in an abstract, it will not be retrieved by the descriptor analysis program. This points up the extreme importance of well prepared and inclusive abstracts).

In the future, as items are described and abstracted, additional learning disability terms may be assigned to the present descriptors. Users of the MSU IMC could then have the double advantage of retrieving information in special education categories and in the skill areas relevant to learning disabilities.

The scarcity of relevant information in this field points to the need for further research as to how the BEH-sponsored IMCs may be best organized for information retrieval purposes; without the implementation of innovative procedures, much of the resource material will remain beyond the reach of tomorrow's teachers.

NOTES

1. S.R. Laycock, "Editorial: Every Teacher a Diagnostician," Council Review, 1934, 1, 47-48.

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3. Ibid., p. 124.

4. Vera L. Hart, "Multiple Handicaps: A Comparison of Special Education Teachers on a Taxonomical Inventory of Eight Areas of Disability," Dissertation Abstracts, 1968, 29 (I-A) 167.

5. Max W. Mueller, "Trends in Support of Educational Research for the Handicapped," Exceptional Children, March 1968, Vol. 34, No. 7, p. 524.

6. Milton Young, "Teaching Children with Special Learning Needs," Day Co., New York, 1967.

7. Barbara Bateman, "Learning Disabilities - Yesterday, Today, & Tomorrow" IN "Educating Children with Learning Disabilities," E.C. Freirson & W.B. Barbe, Eds., Appleton Century Crofts, 1967, pp. 20,21.

8. Leo E. Connor, "Reflections on the Year 2000," Exceptional Children, May 1968, Vol. 34, No. 10, p. 725.

9. John A. Gough, "Educational Media and the Handicapped Child," Exceptional Children, March 1968, Vol. 34, No. 7, p. 563.

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11. Council for Children with Behavioral Disorders, C.E.C. Convention, 1969, Denver.

12. Ibid.

13. Frank B. Withrow, "Enlarged Responsibilities for Educational Services to Handicapped Children," Exceptional Children, March 1968, Vol. 34, No. 7, p. 552.

14. Robert E. Weber, "2500 Answers," Format - Michigan State University, Sept./Oct. 1968, p. 19.