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ABSTRACT

This two-volume annual report is the first in a series of reports summarizing the activities and accomplishments of the Educational Resources Information Center (ERIC) program. The second volume discusses trends and issues in the areas of education covered by each of the clearinghouses. These discussions focus on critical research findings and their implications for practice, and provide notes and references to help interested readers obtain additional information. In order to document and chronicle trends in their scope areas, writers from each of the clearinghouses used a variety of sources, including documents and journal articles in the ERIC database, clearinghouse publications, searches of ERIC and other databases, and discussions with clearinghouse advisory board members and other professionals in the field. Discussions of trends and issues are presented for the scope areas of each of the 16 clearinghouses: (1) Adult, Career, and Vocational Education; (2) Counseling and Personnel Services; (3) Educational Management; (4) Elementary and Early Childhood Education; (5) Handicapped and Gifted Children; (6) Higher Education; (7) Information Resources; (8) Junior and Community Colleges; (9) Languages and Linguistics; (10) Reading and Communication Skills; (11) Rural Education and Small Schools; (12) Science, Mathematics and Environmental Education; (13) Social Studies/Social Science Education; (14) Teacher Education; (15) Tests, Measurement, and Evaluation; and (16) Urban Education. A directory of the ERIC Clearinghouses is appended. (EW)

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# Annual Report—1987

Summarizing the accomplishments of the  
Educational Resources Information Center

## Volume 2—Trends and Issues

Office of Educational Research and Improvement  
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The 16 ERIC Clearinghouses and the ERIC Processing and Reference Facility provided much of the information included in this report.

The report was prepared by Robert Thomas and Robert M. Stonehill, with the assistance of Nancy Krekeler.

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## PREFACE

### About this Report-

The ERIC Annual Report--1987 is the first in a series of yearly reports summarizing the activities and accomplishments of the Educational Resources Information Center (ERIC) program. The report is divided into two volumes. Volume 1, titled The ERIC System and issued in November, 1988, summarized the activities of the ERIC Clearinghouses and other ERIC components, such as the ERIC Processing and Reference Facility.

Trends and Issues--1987 is the second volume of the ERIC Annual Report--1987. The main purpose of this volume is to discuss the educational issues covered by each Clearinghouse. Trends and Issues--1987 highlights critical research findings and implications for practice, and provides notes and references to help interested readers obtain additional information.

A major task of each ERIC Clearinghouse is to document and chronicle the research findings, trends, issues and implications for practice in their respective subject areas. The Clearinghouses use many sources to help them identify these critical findings, including:

- o documents, conference presentations, and reports entered into the ERIC database (in 1987, the ERIC Clearinghouses acquired, abstracted and indexed approximately 12,000 documents for Resources in Education);
- o journal articles entered into the ERIC database (in 1987, ERIC Clearinghouses processed approximately 18,000 journal articles for Current Index to Journals in Education);
- o Clearinghouse publications (in 1987, the ERIC Clearinghouses issued 239 publications) and other published materials;
- o searches of ERIC and other education databases;
- o discussions with Clearinghouse advisory board members and other professionals in the field.

### About ERIC-

1987 was a dynamic year for the ERIC program. For two years, ERIC had been under intense scrutiny during a redesign study conducted by the Department of Education's Office of Educational Research and Improvement (OERI), in which panels of researchers, librarians, and educators studied ERIC and developed a blueprint for improving the program. The culmination of the ERIC Redesign Study was OERI's publication of "ERIC In Its Third Decade." This publication was widely distributed, received many comments and reactions, and set out some new goals and directions for ERIC.

In response to the interest generated by the Redesign Study and by OERI's proposals for expanding and re-configuring the ERIC system, the House Subcommittee on Select Education, on July 30, 1987, sponsored the first oversight hearings of ERIC. These hearings afforded an opportunity for Congress, OERI, the Clearinghouses, and ERIC users to discuss and debate proposed changes to the ERIC system. Following the oversight hearings, OERI began to implement its plans for improving and expanding ERIC, consistent with Congressional requirements that the structure of the 16 ERIC Clearinghouses must remain intact.

OERI identified three main emphases for improving ERIC: ERIC products and services should become more widely used and available; ERIC should become better integrated into OERI's mission of gathering, analyzing and reporting information on the status and condition of American education; and, ERIC should serve a wider, more diverse audience, including policymakers, journalists, practitioners, and the general public.

In 1987, ERIC systematically initiated new products, services, activities and arrangements to carry out those goals. In August 1987, a Request for Proposals (RFP) to re-compete the entire system of 16 ERIC Clearinghouses was issued, and in January 1988, new awards were announced.

While maintaining ERIC's critical roles in acquiring important unpublished documents and reports and in indexing and abstracting the education journal literature, the RFP also established new requirements, including:

- o an expanded series of practitioner-oriented publications;
- o a network of "ERIC Partners" to assist the Clearinghouses with dissemination and acquisition;
- o the collaboration with other OERI-funded programs such as the Regional Educational Laboratories, the National Research and Development Centers, and the National Diffusion Network;
- o the acquisition and indexing of information about statistical databases; and,
- o an improved and expanded array of user services and dissemination activities.

During 1987, OERI began planning for ACCESS ERIC, the first new ERIC component in over a decade. Scheduled to begin operations in Fall 1988, ACCESS ERIC will provide systemwide coordination, dissemination, publicity, training, outreach, and referral services.

In summary, 1987 represented a year of transition. While there were notable accomplishments and achievements, there was also some disappointment, particularly in the level of funding for the program. Despite OERI's request for an increased appropriation for ERIC to support the new initiatives of the ERIC Redesign, funding for FY 1988 remained at \$5.7 million per year.

However, we are optimistic about ERIC and its future. 1988 will begin with the new Clearinghouse contracts in place, and 1989, with the establishment of ACCESS ERIC. In conjunction with activities already underway or planned for the ERIC system and for OERI, we firmly believe that ERIC is positioned to carry out even more effectively its mission to serve the American public with the most current and most important education information available anywhere.

Robert M. Stonehill  
Director, Educational Resources  
Information Center (ERIC)

TRENDS AND ISSUES--1987

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 <b>Appendix 1: Directory of ERIC Clearinghouses (1988)</b>	

## **Adult, Career, and Vocational Education (CE)**

The major issues in these areas tended to reflect the influences of societal and demographic trends, such as the effects of a changing workplace on occupational and educational requirements, the growing concern for disconnected or at-risk youth and adults, and the current emphasis on educational excellence. The following research findings and issues, extracted from acquired documents, journal articles, and Clearinghouse publications, represent the major research areas in adult, career, and vocational education in 1987.

**Improving Basic Skills of Students Enrolled in Vocational Education.** Because the increased emphasis on academic requirements has reduced the time available for vocational courses, a debate has arisen over the amount and type of courses needed. Vocational tasks and academic basic skills should not be taught in isolation from each other (1). Therefore, vocational educators have been searching for better ways to integrate academic concepts into the vocational curriculum, both as a means of preparing youth for a more competitive work force and as a strategy for helping vocational students meet increased academic requirements for high school graduation (2).

**Reducing the Dropout Rate through Career and Vocational Education.** For vocational education to have a positive effect on school retention, potential dropouts must participate meaningfully in vocational education programs. Schools can take specific steps to increase enrollments and to ensure comprehensive, rather than random, exploratory participation. Effective vocational programs help students view vocational education as a viable education option, conduct outreach and recruitment programs for dropout-prone students, and help students identify, enter, and complete comprehensive education programs that lead to occupational skill development (3).

**Improving Access to High Quality Vocational and Adult Education Programs for At-Risk Populations.** One way to improve access to programs for at-risk populations is to identify and address barriers that deter members of these groups from participating in educational activities. Educators are becoming aware that when planning and implementing programs, they must address a full range of psychosocial, institutional, situational, and informational deterrents if they are to attract and retain members of at-risk groups (4).

**Developing Linkages between Public and Private Training Delivery Systems.** The need for partnerships among deliverers of adult and vocational education has reached a critical point. To facilitate the development of linkages among training providers, policy-makers must address the following questions: What types of



training and education can be provided most effectively by which providers? What basic skills are needed for success in the workplace, and where are they best taught? How can the highest quality standards for both educators and training curricula be ensured? Finally, how can the continuing transfer of training technology between educational institutions and employer-based training organizations be ensured (5)?

Assessing the Effect of Technology on Education and Training.

Rapid changes have created a continuing need to assess the effect of technology on education and training. This issue has three aspects. One is concerned with the adoption and use of technology to deliver instruction (6), a second has to do with technology as a subject matter (7), and the third addresses keeping up with technological changes in order to train or retrain individuals for the workplace (8).

Preventing Obsolescence through Adult Retraining. Retraining programs can play a significant role in preventing worker obsolescence. The critical themes and issues associated with retraining that must be addressed include the role of retraining in preventing job obsolescence, policies regarding retraining, the distinction between skills and knowledge, and the preemployment baseline. Because responsibilities for retraining programs may not always be clearly assigned, alliances and potential interorganizational problems need to be examined, including the appropriate role of business, labor, and government in providing retraining (9).

Increasing the Literacy Rate among Adult Americans. Several key areas associated with adult literacy education are the characteristics of illiterate adults, the use of volunteers in adult literacy programs, the impact of changing technology upon literacy skills needed to function in the workplace, and the need for better linkages and communication within the field of adult literacy education. A significant reduction in adult illiteracy depends upon a number of emerging emphases including increased research activity, the development of new coalitions, and increased emphasis upon the prevention of illiteracy (10).

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The ERIC Clearinghouse on Adult, Career and Vocational Education is located at Ohio State University, in Columbus, Ohio.

### Counseling and Personnel Services (CG)

Charting the new and emerging directions of counseling and the accompanying issues and dilemmas is not unlike the task of viewing a detailed road map of an unfamiliar location. The options may be so great and information about each one so sparse that a choice is difficult. With so many populations and settings to be served, counselors may easily lose their way in a jumble of turns, detours, and dead ends. The journey may be most rewarding if counselors seek out the superhighways of counseling practices and services -- those central issues and topics which will most expeditiously lead to the principal cities of challenge and concern for all counselors today. This summary focuses on five of those critical issues:

Achievement, Academic Performance, and Excellence. There is a small but growing awareness on the part of counselors of the need to refocus on cognition and to assist students at all levels and in all settings to optimize their ability to learn and to acquire basic skills in their areas of occupational choice. Underachievement is not simply a "they can, but they won't" situation, but a complex problem with both cognitive and affective dimensions produced by factors that are both internal and external to the student. The research literature suggests that many underachievers conduct a kind of cost/benefit analysis and then choose the most attractive option at the time (1). Other factors include psychological factors such as the non-achievement syndrome (2), the adolescent reaction (3), the fear of failure and fear of success (4), and family factors such as dysfunctional families (5), inadequate role modeling and support (6), and school-family relations and parent involvement (7).

Research on school factors indicates widespread agreement on the powerful impact that the school environment has on student achievement outcomes, and that the single most important factor relates directly to the principal concerns and training of counselors--caring (8).

Wilson (9) has identified the following dimensions of effective treatment programs: 1) group versus individual counseling; 2) structured versus unstructured approach; 3) long versus short treatment; 4) volunteers versus non-volunteers; and 5) counseling with study skills. There was also evidence that parental involvement was a significant factor in program effectiveness.

Students at Risk. Nearly 2-1/2 million youths are at-risk of being alienated from school, society and work. Targeted interventions with students in at-risk categories are becoming increasingly critical, and school counselors have a significant role to play in this effort.

Because it is essential to "get it right the first time," preventive services are of paramount importance. This means more and better early childhood programs, problem identification, monitoring of students' progress, and working with parents to provide crucial early support. With "latchkey" children, for example, successful interventions have included group and individual counseling in the school setting to deal with childrens' fears of being alone, survival skills training as part of the curriculum and in-parent education programs, and quality before- and after-school care programs (10).

High school students are turning to counselors for support previously available from parents and other institutions, and at a time in their lives when the issues in education, life, and career decision-making are particularly salient. In addition to specific information and skills, counselors are at the front line in helping students assess and believe in their own potential, the single most important factor in maintaining motivation and persistence. Studies have concluded, for example, that it is not teacher mastery of content that makes the most difference for students, but the teacher's ability to inspire them (11).

For students in at-risk categories, targeted intervention become even more critical. Teens of divorce in single-parent families, for example, comprise a population where correlations exist with low grades, truancy and acting-out behavior, and where the dropout rate is double that of teens from two-parent homes (12). As many as one-third of children of divorce may also be dealing with the consequences of alcoholism in the family. Group counseling with these students has produced a number of solid gains, perhaps most importantly the sense that they have control over their own lives. The gains are reflected in better communication with parents and in increased self-esteem, which has led to substantial improvement in classroom behavior and academic performance.

Acquired Immune Deficiency Syndrome (AIDS). For counselors, there are at least three important areas where their assistance is needed--direct counseling with those affected by AIDS, coordination of support systems, and education.

Counseling techniques used in assisting individuals with crisis situations are applicable to working with clients affected by AIDS. AIDS victims face unique psychosocial concerns that the counseling community can address. The fear and uncertainty that accompanies patient care, as well as the potential loss of confidentiality, create stresses that may negatively affect the body's fight against the virus (13,14). Useful counseling interventions may assist individuals in developing appropriate coping techniques and stress-reducing lifestyles and activities.

In the educational role, counselors are effective in helping to "forestall panic and increase rationality and hope" by presenting accurate and up-to-date information (15). Providing adequate information helps AIDS victims, the worried well, and the general public through reducing fear and reinterpreting sensationalist stories (13).

Computers and Technology. While discussion and writing about computers and technology are greatly increasing, the skill levels and actual technology use in counseling and human services are still low. There is a growing need for relevant information about specific applications of computers to counseling, as well as for direct assistance to counselors to help them apply and implement technologies in their personal interventions and in the larger programs of which they are members. Overall, it would appear that a number of generalizations are appropriate regarding the use of computers in counseling (16,17,18).

Use of computers should be based on a study of the individual school and its guidance program and a determination of the specific areas in which the computer could be helpful. General prescriptions about the desirability of using computers in counseling frequently are inappropriate and go awry in specific settings.

Adoption of computers is only the first step. More important than the initial decision and the actual introduction of computers is the selection of appropriate software. The usual procedure of selecting the computer first and the software second should be reversed--careful piloting and experimentation with software is the essential part of ensuring that computers will contribute to the guidance program.

Preparation of the counselors and other personnel who will be using the computers is an absolute necessity. All too often the computers are obtained first, followed by a hurried, catch-up effort to provide the users with enough understanding and skill to "make the computers work." Counselor training should coincide with the acquisition of the computers, and counselors should be involved at all stages in the adoption and adaptation of their use in a particular guidance program.

Orientation of students and parents to the use of computers is extremely important. With ongoing orientation, students can develop appropriate expectations about computers and also acquire skills which will enable them to maximize the benefits from their use.

Constant evaluation and review of the outcomes of using computer-assisted and supported guidance and counseling systems is absolutely essential. If installed and then left without staff



involvement and/or monitoring, the systems will turn into window dressing with little real impact upon the students, or they will be used inappropriately and lead to misinformation or poor decisions by students.

Pre-College Guidance. One of the major issues emerging in life/career development is precollege guidance and counseling -- keeping the options open for more students, especially those who are presently underserved, to develop their life career potentials.

Among the findings are the needs for improving program resources, reducing student-counselor ratios, clearly defining counselor job descriptions and responsibilities, reducing administrative chores, and setting clear priorities for guidance and counseling at different grade levels as a means to moderate the conflicting demands of teachers, parents, and students (19).

A particular problem area is access to counseling services which has been found to vary considerably from district to district and from school to school (20, 21). Unfortunately, the data would suggest that those students who could most benefit from the counselor's specialized skills and information (minority and low-income students) are the students least served by counseling. Another issue for many schools, although not always clearly stated, has been whether the resources now devoted to school guidance programs could be better used in direct improvements of instructional programs.

In the view of one analyst, if all students in our schools were served as well (by guidance) as those who are now the best served, there would be no problem. The task is clearly to identify how schools can effectively expand the use of those pre-college guidance interventions which lead to greater access to and equity in college attendance and improved academic performance at college. To accomplish this will require the redirection of both financial and human resources to insure that educational reform includes the strengthening and improvement of guidance and counseling services.

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The ERIC Clearinghouse on Counseling and Personnel Services is located at the University of Michigan, in Ann Arbor, Michigan.



### Educational Management (EA)

Education Reform. One major consequence of the nationwide reform movement has been a dramatic increase in state involvement in education. State initiatives, generated by public pressures for accountability, include programs for upgrading faculty, new curricula or curriculum guides, new school accreditation standards, expanded state review of instructional programs, comprehensive school improvement plans, technical assistance programs, and state-administered minimum competency tests. Although centralized and standardized policies can play a role in school improvement, much evidence suggests that the most significant improvements occur when schools are given more responsibility, not less (1).

School Improvement and Instructional Leadership. A recurrent theme in the literature is that the pivotal figure in the school improvement process is the principal. The related concept of "instructional leadership" refers to the principal's role in providing direction, resources, and support to teachers and students for the improvement of teaching and learning in the school. It includes clinical supervision and teacher evaluation, along with instructional goal-setting, active involvement in curriculum reform, and the monitoring of student outcomes (2).

Teacher Improvement and Professionalism. While the principal is the key figure in initiating and maintaining the school improvement process, the responsibility for the "end product" of such improvement--better educated students--lies primarily with the teachers. In response to a widely perceived decline in the quality of teachers, attention is being given to reform of certification requirements and of salary structures, teacher testing, inservice teacher education, and management of incompetent teachers. Teacher salary reforms, widely discussed, include merit pay, master teacher programs, and differentiated staffing or career ladders. Attention is also being given to reform of collective bargaining procedures, shifting from the traditional industrial union model to a professional, collaborative model (3).

Teacher Recruitment and Selection. Recent reports have reached different conclusions about the current and projected supply of applicants for teaching positions. Whereas the National Education Association, the American Federation of Teachers, and the RAND Corporation's Center for the Study of the Teaching Professional predict a severe teacher shortage, an analysis prepared by the U.S. Bureau of Labor Statistics claims no shortage exists or is pending. The difficulty of predicting teacher supply and demand, which varies greatly from state to state, makes it unlikely that an authoritative assessment, either of the present or the future, will emerge soon (4).

Training and Selection of School Administrators. The National Committee on Excellent in Educational Administration recently noted "troubling aspects throughout the field," such as a lack of leader recruitment programs in the schools, a lack of minorities and women in the field, a lack of quality candidates for preparation programs, a lack of preparation programs relevant to the job demands of school administrators, and a lack of a national sense of cooperation in preparing school leaders. Preparation of principals needs to combine academic and "hands on" learning, including an opportunity for trainees to reflect on the skills being learned (5). To improve their selection procedures, aggressive school districts are expanding their applicant pools, developing specific selection criteria and announcements, gathering multiple information about candidates, and using systemwide screening and interviewing procedures (6).

Community Relationships and School Business Partnership: To gain support for education, more superintendents and principals are learning how to build coalitions or communities of interest in schools (7). Exemplary secondary schools have forged collaborative links with their communities in five ways: active recruitment of human resources, aggressive public relations programs that involved parent use of staff members who are good communicators for fund raising, invitation of community members into classrooms and visits of students and staff to the community, and establishment of an identity for the school that consciously takes advantage of community characteristics (8).

School Finance. Finance is perennially a primary concern among educational policy makers and administrators, but in the last five years, added financial burdens have been placed on schools as they endeavor to implement educational reforms or take advantage of the latest breakthroughs in computer technology. A decline in federal aid to education, coupled with the reluctance of citizens in local districts to pass school levies, has resulted in states assuming a greater proportion of the funding of public education.

Educational Facilities. The field of educational facilities design and management is fairly constant in its general concerns, but like other areas, it is responsive to changing economic and social conditions and technological developments (9). After a decade in which a majority of the nation's schools had to deal with school closures caused by declining enrollments, now school officials in some parts of the country are facing the need for new facilities and restoration of deteriorating buildings.

An upward trend in the birthrate that began in the early 1980's is swelling enrollments in elementary grades, particularly in the South and West; total national enrollment will reach 41 million in 1992, compared to about 38.7 million in 1986, according to the U.S. Department of Education. Compounding the increase in

enrollment are state reforms that have required school districts to reduce student-teacher ratios (10).

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The ERIC Clearinghouse on Educational Management is located at the University of Oregon, in Eugene, Oregon.

## Elementary and Early Childhood Education (PS)

During the last twenty years in the field of early and elementary education, there have been substantial shifts in the nature of concerns. During the first half of this century it was a widely held belief--and probably an exaggerated one--that the first six years of life were critical to personality development.

However, in the late 1960s the realization that the first six years of life were of equal, and perhaps greater, importance to intellectual development emerged from developmental research. A new awareness that failure to thrive intellectually in the first five or six years could be irreversible heightened the sense of urgency about the timing of intervention in the lives of children believed to be deprived of stimulation.

The trends and issues now capturing attention are as follows:

Preschool Enrollment. Preschool enrollment continues to rise dramatically, and this trend is expected to continue into the next decade. The enrollment increases have occurred in all socioeconomic, racial and ethnic groups and include preschool settings sponsored by a wide variety of public and private agencies.

Children at Risk. In many states concern is emerging for a category of young "children at risk." These include children of teen-age mothers who are typically poor, single and unemployed or in need of child care if employed. Sometimes these children are born prematurely. They may be underweight as infants and children and may suffer from handicaps related to the effects of the mothers' use of drugs and alcohol. The development of appropriate intervention strategies for such children is likely to be a major issue in the coming decade.

Day Care for Infants. The most pressing current need is for good quality day care for infants. As young mothers increasingly enter the work force or elect to remain employed following the birth of a baby, this need will persist and become more acute. At present there are bitter disputes over some recent reanalyses of available research which suggest that experience in group care under the age of one year may harm the child's psychosocial development. This is an area in which serious ethical concerns make it extremely difficult to conduct the needed research.

The Day Care Trilemma. The National Association for the Education of Young Children, the 55,000 member organization joined by most people affiliated with preschool and day care settings, has issued a report analyzing the trilemma faced by parents and providers of day care. The key concept of a dilemma is that both "horns" or options are equally worthy or unworthy

choices and that whichever option is chosen, the benefits of the other are inevitably lost.

In the case of the day care "trilemma," the three "horns" for parents, providers, and sponsors are: quality, affordability, and compensation. It is clear from research on day care that its quality determines its effects on children. Important indices of quality are the stability and qualifications of the staff. The more stable and better trained the staff, the higher the quality of the program. However, stability and qualified staff can only be achieved if the staff receive adequate compensation.

Issues in the Kindergarten. The drive toward all states enabling and supporting kindergarten has finally reached its goal. There is less discussion now than there was during the last few years about whether to extend kindergarten to an all-day program. Instead, an emerging issue is that of what constitutes the most appropriate curriculum for kindergartners. The divergence of views concerning appropriate curriculum in both kindergarten and preschool programs provoked the National Association for the Education of Young Children to produce position statements on developmentally appropriate practices for preschool and primary school children.

Teacher Education and Reform. The preparation of teachers for elementary and early childhood education has come under scrutiny in the same reform reports which have questioned teacher education in general (Goffin, in press). At the same time as calls are being made for the improvement of teacher education, there is great concern for the "professionalization" of the early childhood work force. This concern is related to the issues of affordability and compensation discussed above. A chapter for the forthcoming Handbook of Research on Teacher Education, to be published by the Association of Teacher Educators, will be written by Lilian Katz, director of ERIC/EECE.

In summary, trends in the field of early childhood education include the increase in the number of children enrolled in preschool programs; continued debates about the effects of group care during the first year of life and developmentally appropriate curriculum for such care; the development of special programs for children "at risk"; and vigorous discussion of the issues surrounding the quality and training of early childhood personnel.

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The ERIC Clearinghouse on Elementary and Early Childhood Education is located at the University of Illinois, in Champaign, Illinois.

### Handicapped and Gifted Children (EC)

**Students At Risk.** These words have become commonplace in the general educational lexicography of the late 1980s. Most frequently, those using the at-risk designation refer to students from low-income families and/or students who do not speak or understand English well. In short, they are students "who are not likely to complete high school successfully."

People associated with students who are handicapped or gifted have long held the view that these students are members of the at-risk educational universe and that they deserve individualized educational interventions in order to be "guaranteed" a free, appropriate public education. The trends and issues discussed below are ones that demand attention as we seek to reduce or eliminate educational risks for students with special gifts, talents and/or handicaps.

**Culturally Diverse Exceptional Students.** Exceptional children from multicultural and ethnic minority groups are of particular concern to special educators. Participation of ethnically and culturally diverse children in special education classes has produced problems both in the over-representation of some groups in programs for the handicapped and under-representation of Blacks, Hispanics, and American Indians in programs for the gifted.

This group of students faces the potential of being doubly at-risk. There are legitimate exceptional children among multicultural and ethnic minority groups in the U.S. who need special education services. But our assessment and programming procedures must be improved to ensure that their placement in any school program is correct and appropriate. Recruitment and professional training initiatives must also be geared to attracting many more candidates to the education profession from ethnic and multicultural groups (CSR 517, 555, 568).

**Getting an Early Start: Birth to Three.** Infants and toddlers in need of early intervention services can be classified into three groups: (a) developmentally delayed or disabled children who have congenital disorders, sensory impairment, neurological dysfunction, or significant delays in one or more of the major areas of functioning (e.g., cognitive, language, social-emotional, and motor development); (b) medically or biologically at-risk children with health factors that are known to be a potential threat to development, such as prematurity and small size for gestational age; and (c) environmentally at-risk children whose physical or social circumstances, such as severe poverty, neglect, or abuse, may undermine their developmental progress.

As early childhood special educators address the futures of at-risk infants, they face numerous and unique problem areas and issues. Key issues to be considered now and into the immediate future include interagency coordination (local, state, and federal levels as well as public and private agencies); state mandates and how they are being implemented (states are using many different approaches to serve the birth to three population); family involvement; work with pediatricians and other medical and health personnel; identification and assessment of at-risk infants; personnel preparation; curriculum models; and prevention (nutrition and prenatal care) (CSR 522, 539, 563).

Gifted Education. Education of gifted children and youth continues to be of concern to the parents and educators of the gifted. The gifted and talented represent an underserved and underachieving population of students and therefore are clearly at risk of not reaching their full potential. This situation will not change without a concentrated effort to affect policy in the schools. It is estimated that there are 2.5 million gifted and talented students in elementary and secondary schools, and only 40 percent of those who require special education services are receiving them.

Federal legislation has recently been passed that supports education for the gifted and talented but funding is still needed for implementation. It is important that we focus federal and other resources on the following: (a) preservice and inservice training of personnel; (b) model projects and exemplary programs; (c) technical assistance and information dissemination; (d) research methods and techniques. Also, there are specific special gifted populations that need emphasis in our education system: children and youth who are female, have limited English proficiency, are economically disadvantaged, are American Indians, or are both gifted and handicapped (CSR 538, 544, 553, 559, 565, 569).

Secondary Special Education and the Transition from School to Work. It is at the secondary school level where the at-risk aspects of special education coincide with the at-risk features most predominant in current educational dialogue: handicapped students in secondary schools drop out of school at an alarmingly high rate and have generated a "real and troubling trend." It is incumbent upon the profession to find assessment, curricular, transition, and interagency solutions to this issue.

Today, secondary programming is a primary concern of special education. Needs in secondary education include (a) development of appropriate secondary school curriculum, (b) continued focus on effective transition models, (c) adequate preparation of secondary school special education personnel, and (d) research to track special education students who exit from the school system (CSR 533).



**Restructuring the Relationship between Regular and Special Education.** A most important issue facing education in the next few years is restructuring and redefining the relationship and boundaries between special and general education. While there is a wide range of opportunities for interface, the most promising and productive examples occur among direct service providers at the local building level where staff-support teams provide a forum for addressing student and staff support, personnel development, and instructional technology. At the broader local and state levels, leaders in both general and special education must cooperate in promoting and supporting opportunities in service delivery and in the funding of education programs for all students at risk.

Special education, like regular education, is concerned with effective schools, quality teaching practices, and teacher competency since these are viewed as interventions that can reduce student risk. Areas which now have a research database and are of importance to school personnel include precision teaching, peer teaching, cooperative learning, assessment for curriculum planning, technology, applied behavior analysis, direct instruction, career education, early intervention, parent involvement in instruction, and classroom management (CSR 521, 543, 548, 549).

#### NOTES

Because these issues are supported by such large bodies of documentation, the references cited are Clearinghouse-produced computer searches which include material from both the ERIC and Exceptional Child Education Resources (ECER) databases. References are available from the Council for Exceptional Children, Reston, VA 22091.

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- 538 Gifted Female Students (6/87)
- 539 Programs for Handicapped or High-Risk Infants (4/87)
- 543 Facilitating Mainstreaming: Guidelines for Teachers and Principals (12/86)
- 544 Identification of the Gifted (6/88)
- 548 Cognitive Strategies for the Mildly Handicapped (12/86)
- 549 Managing Exceptional Students in the Regular Classroom (12/86)
- 553 Gifted and Learning Disabled (12/86)
- 555 Culturally Diverse Gifted Students (12/86)

- 559 Research on the Effectiveness of Gifted Education (1/88)
- 560 Instructional Technology for the Mildly Handicapped (11/87)
- 563 Preschool Programs for Handicapped Children (1/88)
- 565 Underachieving Gifted Students (3/88)
- 566 Teaching Learning Disabled Elementary School Children (4/88)
- 567 Teaching Learning Disabled Adolescents (4/88)
- 568 Identification and Assessment of Exceptional Bilingual Students (5/88)
- 569 Teaching Gifted Elementary School Children (6/88)

The ERIC Clearinghouse on Handicapped and Gifted Children is operated by the Council for Exceptional Children, in Reston, Virginia.

### Higher Education (HE)

Not since Sputnik has so much public attention and concern been focused on higher education. Recent national debate has focused on the purpose, standards, and future of American higher education. Changes in the economy, demographic movement, and public concern over the quality of education suggest the following general trends:

Greater state interest. Governors and state legislators will give increasing attention to both public and private education. For public institutions in particular, there will be more interest in defining the role and mission of higher education in each state and in assessing student performance. States will also focus on possible duplication between the public and private sectors, including more efforts to prevent private colleges from initiating new programs similar to existing state programs (1).

Changing student body. While the total enrollment for higher education has remained stable, the overall student body composition has changed. There are more women, part-time, older, and vocationally oriented students than attended college in the 1970s (2), and more ethnic groups are represented, with Hispanics projected to become a larger segment.

Competition for students. Because of the smaller traditional college applicant pool, many institutions, especially the smaller private liberal arts colleges, must develop marketing efforts to attract more students. Marketing will promote such varied features as program quality, desirable locations, and successful graduate job placement; it may also be pure hype. In addition, a variety of "corporate colleges" are providing competition for traditional colleges (3).

Student competencies. Public demands for quality in higher education are bringing about heightened pressure to define a "basic education," causing undergraduate institutions to reexamine their core curricula and to consider a "value added" approach. Greater emphasis will be placed on the humanities, including history, literature, foreign languages, and on technology. Calls for "assessment" continue at institutional, state, and federal levels.

Higher cost for education. The total cost for attending a four-year college or university continues to escalate beyond the general cost price index. The cost increase is exacerbated by a decline in available student financial aid (4). Debate continues on alternative ways to pay for college.

**Students.** Higher education must weigh carefully student issues related to minority access, student debt, women and part-time students, and foreign students. Since fewer blacks are attending college (4), suggesting an increasing racial class gap, and since parents are the single most important motivating force for students (5), colleges should collaborate with elementary and secondary schools to reach parents. A decline in black college graduates will mean a decline in black role models.

Among most students, financing college is a great concern as college costs increase regularly. With a greater reliance on loans, there is worry about the effect on career choice and student retention, or whether students will be discouraged altogether from attending college. Some feel that the projected personal debt will also negatively affect both the spending ability and general altruism of college graduates (6).

Women and part-time students in particular continue to have a more difficult time in funding their education, and institutions and student financial aid programs must address the unique financial needs of women if true equality is to be achieved (7). Another segment of the student body, foreign students (2), brings its own needs to a campus. Since many institutions are seeking international students to maintain enrollments, communication skill or social adjustment problems must be solved.

**Management.** Aside from steady or declining student enrollments, several external issues will also affect higher education. The large federal deficit implies little chance of any major increase in federal support to education, and state governments are pressured by competing forces (the elderly, prison reform, etc.). Academe's need to become more self-reliant has implications for institutional leadership (8), and long-term and strategic planning must take into account environmental and economic influences (9).

In the financial area, college administrators will face increasing complexities in setting tuition levels and paying for staff, equipment, and facilities, including the rehabilitation of the aging infrastructure whose maintenance has been deferred for years. Many private institutions provide their own financial aid program for students (10), and administrators concerned with enrollment management at all colleges will look at marketing, admissions, and student retention.

**Faculty.** Stable or declining enrollments for higher education indicate a stagnant condition for faculty employment. There will be relatively few positions open; those that do become available will be to fill vacated slots rather than new ones. The "tenuring in" of upper ranked faculty has serious implications for faculty vitality in general (11), and particularly for race

and gender equality, faculty evaluation, incentives for early retirement, faculty workload, and for "migrant" and part-time faculty who may work at more than one institution to piece together a full-time equivalent job.

Curriculum. Recent studies and public discussion have questioned the quality and adequacy of the U.S. education system. Focus has been on two areas: first, that students are not getting specific knowledge to be properly "educated" in an integrated manner (5), and second, that the ethical and moral development of these students is inadequate.

This latter concern has been heightened by the ethical decay being witnessed in society through such events as the "Irangate," the PTL scandal and Wall Street insider trading scandals. Another area of concern is the role of remedial programs for underprepared students. Further implications for the college curriculum include the debate surrounding occupational versus liberal or general education (12), educational delivery systems, and computer instruction.

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The ERIC Clearinghouse on Higher Education is located at George Washington University, in Washington, DC.



### Information Resources (IR)

There appears to be an unflagging faith in the promise of technology. Even with the false starts and, in some cases, failures, technology prevails and nearly every study, report, or prescription regarding education today highlights the "promise" of technology in education. The optimism stems mostly from the promise of computers in the future of societies worldwide and most writers believe that the schools must begin to teach about computers even though there is a dearth of compelling research evidence to warrant the optimism.

The intellectual aspirations for computers in the schools focus on their use for cognitive purposes such as problem-solving and critical thinking. Acquisition of information skills for an information age is now being emphasized in curricular revisions. This is a step beyond computer "literacy" of several years back when familiarization with the instrument itself was thought to be necessary with applications as a secondary goal.

The categories into which trends and issues fall are (1) management; (2) technology (hardware and software); (3) training; and (4) research.

Management. The National Governors' Association is calling for an increasing state role in hardware evaluation, quality control, and aggregate bidding and purchasing. They, and others, seek greater clarity in licensing agreements for multiple copies of microcomputer and video software. Copyright questions permeate the education scene where insufficient precedent cases have failed to establish guidelines for reproduction of original materials.

Technology. Technology is most frequently found in management situations: school offices and all types of libraries. The major purpose of the technology is to increase productivity and to improve management practice. It seems to be successful on both counts. But it is for instructional purposes that schools seem to lag. The mass media has given way to individual media since such devices are less costly, smaller the size, and simplified in operation. There is less competitiveness between and among media; they seem to be complementary and used in a variety of ways. More software is being produced locally with student/teacher producer-programmers using microcomputers, handheld video cameras, cassette tape recorders, and personal cameras.

The commercial products that are available are uneven in quality and calls for improvement are heard across the land.

**Training.** Professional library schools are turning more to preparation of information specialists who serve in locations other than libraries. More emphasis is being placed on communication theory and practice as well as on behavioral and cognitive psychology. The new librarian must be in tune with technology and focus on user needs rather than on building collections of nonspecific resources or unidentified patrons. Related to training is the issue of productivity. How can training improve the productivity of teachers and other education personnel? How can productivity be measured? In what ways can technology be used to help improve the efficiency and effectiveness of learning and teaching?

**Research.** There are good research findings in regard to the teaching and learning process. There are fewer findings about applications of technology. As long as the questions focus on matters of teaching and learning, the results are more likely to be useful. Yet, studies abound that attempt to "justify" the use of computers in schools. The results of these studies are much like those of earlier media-oriented studies that looked at the medium rather than the learning.

There are some promising studies currently that are asking the "right" questions and they tend to explore the design of the materials--the sequence, the action of the learner, the visual and verbal cues that lead to enhanced learning and so forth. Some of the more promising research investigates problem-solving behaviors and the use of higher-order skills rather than rote memorization as a indicator of learning.

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The ERIC Clearinghouse on Information Resources is located at Syracuse University, in Syracuse, New York.

### Junior and Community Colleges (JC)

**Access.** The community colleges grew into one of the largest sectors of postsecondary education by opening their doors to all who wanted to attend, serving as non-compulsory extensions of the secondary schools. By 1987, five million people were attending community colleges. As student enrollments expanded and budgetary restrictions began to affect the colleges' capacity for growth, questions were raised regarding the need or desirability of placing limits on student matriculation. If there were to be limitations, to which categories of students should the colleges have primary obligations? Students just out of high school? Adults seeking career change? Low achieving students who could not attend college elsewhere? Older students seeking courses for their personal interest?

The issue has been raised in numerous forums. There is agreement that the colleges must endeavor to serve as many people within their districts as possible. However, if limitations must be placed, the consensus seems to be that priority should be given to those students seeking four-year college degrees, and those pursuing degrees or certificates enabling them to obtain employment or advance in jobs they already hold. The poorly prepared students who need remedial or compensatory studies have been identified recently as a third population worthy of the colleges' attention. Lowest on the priority list are adults seeking courses for their personal interest.

As the colleges are forced to consider limiting enrollment, many have begun entrance testing, a practice generating concern among spokespersons for groups historically denied access to college. Currently, the tests are not used to deny access but to place students in programs commensurate with their abilities. However, the practice of testing and placing matriculants, coupled with state-level demands for institutional accountability, may lead colleges to begin selecting students who have the greatest likelihood of succeeding.

**Student Flow.** Access to education is frequently linked to concerns about retention and student achievement, and about the passage of students through the colleges and on to the work place or to the baccalaureate degree. Program completion rates in the community colleges are considerably lower than in the selective-admission four-year colleges and universities to which they are often compared. Community college leaders often justify the colleges' low graduation rates in terms of legitimate student course-taking patterns to achieve short-term objectives, stressing the role of community colleges as places where students may take only a course or two and then move on.

The dilemma is that while many students intend short-term enrollment to upgrade job skills or for personal interest, the community college curriculum tends to be organized as though everyone were working toward an associate degree. This will not be resolved as long as the colleges are funded on the basis of student attendance and the curriculum is organized according to traditional degree-directed categories.

Maintaining the Comprehensive Curriculum. The colleges offer liberal arts courses much like those seen in the lower division of universities, courses designed especially for students seeking immediate employment, remedial studies for poorly prepared entrants, and a variety of personal interest courses resembling those offered through extension divisions of universities. While state budgets for postsecondary education were increasing and local funding was available for non-credit programs, all types of curricula could be offered.

But with funding agencies now seeking program justification, the colleges must articulate the relationships between the curriculum and broader institutional purposes. Here they find most difficulty in justifying the remedial work, in many states remanded to the lower schools, and the courses for individual interest. The major issue is whether the colleges can continue to offer a wide variety of courses for the broad student population they serve.

Faculty. Faculty became an issue recently because of the high level of replacement that is imminent. Large numbers of instructors came into the community colleges during the period of their greatest expansion in the 1950s and 1960s. These instructors will be retiring within the next decade and will have to be replaced. The university graduate programs and the occupational and business communities will serve as the source of the new instructors. Remaining issues relate to whether positions should be filled with full-time or part-time instructors, and how employment criteria and subsequent instructor evaluation should be carried out.

Collective bargaining has made greater inroads among community colleges than among other sectors in higher education, hence any decisions about instructor selection, reward, and retention must be made within the context of the union contracts. Merit pay is being considered in some community college districts but little progress has been made nationally. Keeping faculty current in their field and satisfied on the job and expecting them to sustain teaching loads of approximately 15 hours a week is a continuing challenge.

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The ERIC Clearinghouse for Junior Colleges is located at the University of California at Los Angeles.

### Languages and Linguistics (FL)

The Proficiency Movement. During the 1970s and 1980s foreign language educators became increasingly aware that their efforts to help students become competent communicators in a foreign language were futile. Despite the change in emphasis from developing students' cognitive skills during and prior to the 1960s, to honing their oral skills in the early 1970s, the underlying method of language teaching continued to be based on an ordered presentation of grammar.

However, it has become more and more apparent to foreign language educators in the 1980s that speaking a language is much more useful than knowing about a language. Since communicative ability, or proficiency, varies according to the requirements of a particular situation, foreign language educators have begun to seek a framework that describes and promotes proficiency within a situational context.

National efforts to promote unification of purpose and action in teaching for foreign language proficiency among language teachers in the United States include the development of the American Council on the Teaching of Foreign Languages' (ACTFL) foreign language proficiency guidelines for listening, speaking, reading, and writing. This standard of measurement will lead to better articulation between stages of language study in academic settings. It will enable teachers, students, and "consumers" to measure more accurately the real outcomes of instruction, thereby satisfying the needs of government, business, and industry to place language students appropriately in positions where foreign language skills are necessary.

Because of the growing awareness of the proficiency scale and procedures, many institutions of higher education, local education associations, and individual schools are beginning to apply these concepts to the development of local proficiency tests, teacher training programs, classroom materials, textbooks, classroom practice, course sequencing, and regular progress testing.

Computer-Assisted Language Learning. Microcomputer hardware is increasingly in evidence in the nation's foreign and second language classrooms as prices have decreased and quality and sophistication have improved. Technological advances have introduced new developments and possibilities, including the use of "touch screen" operation of microcomputers to eliminate the necessity of a keyboard, the combination of microcomputers with laser disks to provide audio and visual input for language learning, and speech synthesizers to make machines "talk." Software is also becoming more varied and sophisticated than the original "drill and practice" formats. More innovative computer-

assisted language learning (CALL) software packages and instructional adaptations of non-CALL software are beginning to appear.

Language teachers have discovered, for example, that an extremely large amount of genuine conversational interaction occurs when a small group of students work together at one terminal on a problem-solving task. Further developments are being made by researchers at the Massachusetts Institute of Technology and the University of Delaware, where a new generation of computer-based exercise are expanding artificial intelligence, so it can accept natural language out-put from students, with the potential to accept oral student responses as well.

Despite the rising enthusiasm and acceptance of the new technology in CALL, some basic questions have yet to be answered, including: How should CALL software be evaluated? How do learners interact with new technology? How should CALL be integrated into the foreign or second language curriculum? What is the most efficient use of the new technology in language instruction in terms of cost and benefit? All of these questions make up part of the most important one: how can this technology best be used to improve the instruction of second and foreign languages in the United States?

Parent Involvement. Parental involvement has been shown to benefit student achievement and improve parents' attitudes toward themselves, their children, and their children's schools. As described in a recent ERIC/CLL News Bulletin, the benefits of parental involvement accrue regardless of the parents' level of education or socioeconomic or marital status (Met, 1987).

According to U.S. Secretary of Education William J. Bennett, when parents are involved in their children's education, the knowledge they gain about the school and its programs enables them to assist their children and to assess the quality of the school and teacher more effectively. A growing body of research evidence suggests that important benefits are to be gained by school children when their parents provide support, encouragement, and direct instruction at home (Epstein, 1985).

Parents can help their children learn a foreign language by (1) modeling positive attitudes toward language learning; (2) sponsoring extracurricular activities; (3) providing opportunities for meaningful language use, and (4) supporting language advocacy activities at local, regional, and national levels. Involving parents as collaborators and co-learners with their teenage sons and daughters produced a significant gain in the acquisition of spoken and written language skills. Although parent involvement has long been considered a component of successful education, it is only recently that the often forgotten parent of second or foreign language students have been



brought into the mainstream of their children's education.

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The ERIC Clearinghouse on Languages and Linguistics is operated by the Center for Applied Linguistics, in Washington, DC.



### Reading and Communication Skills (CS)

The major theme in the 1987 literature was "maturation" in the profession. Although topics of high interest in recent years--reader response theory, writing process instruction, computers in English and reading programs, whole language instruction, the effects of mass testing--have not lost their power, the tone of professional discourse has become markedly sober.

For example, hyperbolic claims of the power of the computer to revolutionize education within a short time have greatly diminished (1). Similarly, stock formulas for writing process instruction and gross confusions of process teaching with free writing are seen less frequently (2). Also heartening is the fact that the traditional impatience of classroom teachers with theorists and researchers (and vice versa) has given way to a growing sense of partnership. Teacher-researcher collaborations are no longer a novelty, and teachers in increasing number are venturing into research projects and professional writings on their own (3).

Another sign of maturity is a tendency to resist educational dogmatists. The profession seems to be growing weary of those who demand total dedication to particular views: student-centered writing (or analysis and imitation of models), phonics-first instruction (or whole language instruction), literary classics (or young adult works), and so on. One writer complained about "hardening of the orthodoxies" in the profession, but his very complaint seems part of a trend towards wariness of educators bearing certitudes (4).

While educators need to enjoy this present plateau, they should not rest too comfortably on it, since a theme of "stasis" can be argued almost as easily as one of maturation. For example, despite intensive interest among researchers and practitioners in teaching writing (especially revision) with word processors, little has been done to assure that the major prerequisite skill--keyboarding--is adequately in the curriculum. But in the field of writing, curriculum development and research in keyboarding skills is not nearly as stimulating as parallel work in composition, and so the profession seems content to cross its fingers rather than examine the keyboarding problem which, ironically, is far more susceptible to intervention.

The same problem of lack of vigorous research agendas exists for other nonglamorous but important educational questions. Class size in English and status studies (5) are cases in point.

A certain amount of future-gazing may be useful, even as we acknowledge a general history of failed predictions in education and the social sciences (6). For instance, we should not be

ignoring the emerging voice-to-screen (V-S) technology now being employed in industry. V-S technology bypasses the need for keyboarding altogether. V-S places a new premium on oral composing--in particular, the cognitive skills involved in dictating from mental notes and informal outlines. It is not rash to project early 21st-century school use of V-S, and to call for more research on mental processes of skilled users of current dictation systems, conventional and V-S (7).

Another important topic suffering from lack of dialogue in the profession is the role of information in English language arts programs, kindergarten through college. Champions of particular approaches to curriculum tend to downplay or highlight the role of information in ways that are highly predictable. For example, advocates of process instruction stress the psychology of the learner and pedagogy appropriate to the learner's stage of development. But they often shy away from hard questions about what, specifically, should be taught.

Those who support traditional language arts curricula are usually ready to specify particular content, but their rationales tend to be circular, calling on easy phrases like "cultural heritage" and the "literary canon" as a defense for choosing traditional as opposed to contemporary content in grammar, rhetoric, or literature. In essence, process advocates need to be held responsible for taking a stance on the range of information they see as appropriate in kindergarten through college programs, while traditional educators need to provide rationales that are not tautological and that deal with new bodies of content in the discipline (8).

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In 1987, the ERIC Clearinghouse was operated by the National Council for Teachers of English, in Champaign, Illinois. In 1988, the Clearinghouse moved to Indiana University, in Bloomington, Indiana.

### Rural Education and Small Schools (RC)

#### Achievement of American Indian Students in Math and Science.

There is a growing interest in motivating American Indian and Alaska Native students to higher achievement in math and science courses (1). Indian students have tended to drop the math courses they needed to better qualify them for certain jobs and careers. They tend to be quite hesitant about choosing careers in scientific and technical fields because of a perception of incompetency in the math and science skills needed to succeed (2).

Increased Access to Higher Education for Mexican Americans: Much attention has been focused in recent years on the fact that although Mexican Americans are the fastest growing minority group in the United States, the number of Mexican Americans attending postsecondary institutions is relatively low (3). Rothman indicated that, although ACT scores for Mexican Americans rose from 15.2 to 15.4, they still trailed national averages (4).

The completion rate for Hispanics at community colleges and the transfer rate to a 4-year college are low. Costillo cites studies isolating four major problems that contribute to the diminishing transfer rate: (a) the poor communication of transfer requirements to students (b) the lack of information systems for counselors who advise transfer students; (c) the complex admission and registration procedures; and (d) the lack of financial assistance (5). The process for admission to an institution of higher education is complex and requires skill and understanding to negotiate. The skills to understand and manage this process are especially critical needs for Mexican Americans.

Retraining Migrant Secondary Students. Migrant families are unique because, by definition, they live their lives on the move. The need for migrant children and youth to get a consistent education often takes second place to the family's need to make a living. Because of their mobility, these students are faced with the problems of adapting to new schools, classmates, and teachers several times a year. By high school, enrollment procedures and the transfer of credits needed for graduation become so complex that few migrant students graduate from high school. Migrant educators are continuously exploring ways to aid secondary migrant students in overcoming these various obstacles (6).

Outdoor Education for Special Populations. There continues to be a focus on outdoor education as a means of utilizing the uniqueness of the environment to address the specific educational needs of certain special populations--the handicapped, gifted, juvenile offenders, and ethnic minority groups (7). Brannan cites some benefits that may apply to all students handicapped and nonhandicapped: (a) participation in the total learning

experience; (b) opportunities to pursue learning related to all areas of the school's curriculum (i.e., math, reading, physical education); and (c) social development through interdependence and interaction with peers and adults (8).

Rural Education and Small Schools. Although the population of the United States is overwhelmingly metropolitan, yet in 1980 more than 56 million people - about a quarter of the population - lived in non-metropolitan counties. These people were spread across 2,400 counties of the nation's 3,100 counties, making rural issues a concern in nearly all regions of the country (9).

Nearly two-thirds of the 15,600 public school districts are in areas designated as "rural," and half of all public schools and one-third of all classroom teachers are engaged in the educational process in those areas (10). Many of these schools face rural - specific staffing, expenditure, and instructional problems that are different from those in urban areas (11) and that reflect some of the basic differences between rural and urban America.

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### Science, Mathematics and Environmental Education (SE)

In 1987, the areas of expanding user interest were education related to science/technology/society, education related to pollution (hazardous wastes, chemicals, etc.), excellence in science and mathematics education, improving learning and achievement in science and mathematics education, modifying the curriculum in science and mathematics education, reform in teacher education, networking, and engineering education.

Mathematics Education. Critical issues included the following: (1) concerns related to lack of adequate achievement at the elementary and secondary school levels; (2) need for curriculum change; (3) need for development of different instructional materials; (4) changing instruction in mathematics courses; (5) time and enrollments in mathematics courses; (6) teacher quality, supply, and demand; (7) use of technology; (8) increasing learning and opportunities for minorities; (9) networking; (10) educational excellence; (11) the potential impact of cognitive learning research on curricula, instructional materials, instruction, and learning; and (12) increased activity at state and local levels.

Science Education. Critical issues included the following: (1) concerns related to lack of adequate achievement at the elementary and secondary school level; (2) need for curriculum change; (3) development of different instructional materials; (4) changing instruction in science courses; (5) time and enrollments in science courses; (6) teacher quality, supply, and demand; (7) use of technology; (8) increasing learning and opportunities for minorities; (9) networking; (10) educational excellence; (11) the potential impact of cognitive learning research on curricula, instructional materials, instruction, and learning; (12) increased activity at state and local levels; and (13) increased activity in out-of-school educational programs.

Environmental Education. Critical issues included the following: (1) interest in topics that directly affect human health, such as toxic substances and hazardous materials (especially in the home, water supply, and air) and (2) environmental problems that are in the news such as waste reduction, waste disposal, population trends, and the ozone layer surrounding the earth.

Achievement and Attitudes. Data continue to indicate that many students are not achieving as well as desired in science and mathematics. In addition, international comparisons indicate that a large percentage of American secondary school students do not score as well on achievement tests as similar students in many other developed countries. Research continues to indicate that many students develop negative attitudes toward science and mathematics and do not take these courses, unless required, at the secondary school level.

Curriculum Change and Instructional Materials. The dialogue on need for change, especially in science and mathematics, continues. National groups have been established in science (AAAS and associated groups) and mathematics (National Academy) to consider what ought to be included in the curriculum and how it should be taught. New courses and programs are being developed, primarily with support from the National Science Foundation.

Use of Technology. There continues to be increased use of various technologies in science, mathematics, and environmental education. Research data suggest ways technologies can be used to contribute to instruction and learning. Additional research is being conducted on the use of calculators, microcomputers, videocassettes, and other technology; videodisk technology is being used in schools and the number making use of this technology is increasing.

Many issues have developed related to the use of these technologies and are being debated and investigated by research. A major issue is the use of the calculator to modify elementary school mathematics; a substantial amount of research has been completed and suggests the calculator could be used to make major modifications in elementary school mathematics curriculum and instruction. The actual impact of the calculator has been limited due to the lack of curriculum materials designed to use the technology effectively and some reluctance on the part of many educators to make major changes.

The use of the microcomputer for instruction in science and mathematics is another area of research and debate. Some instructional material has been developed; more materials are in the process of being developed and research in both science and mathematics is being supported. The technology has the potential for making significant changes in instruction in both science and mathematics; however, there are many problems and issues involved including the development of software, costs of equipment and maintenance, research on effect use and cognitive learning, research to provide the basis for material development and instruction, and equity regarding the availability of equipment and software.

Inclusion of Specific Topics and Concepts in the Curriculum. There have been several topics and concepts that have been added to many school programs; there is also considerable debate concerning what ought to be in science, mathematics, and environmental education programs. A few examples are presented. The inclusion of materials related to science/technology/society has been a continuing trend in many state and local school programs. There has been increased emphasis on adding applications and problem solving activities to mathematics

programs. Curricula related to the environment have shown increased emphasis on environmental problems that directly affect human health such as toxic materials around the home, toxic wastes, pollution of air and water, and radon as well as global problems.

Instruction and Classroom Climate. There has been activity especially at the elementary grades, on identifying and implementing strategies that increase learning. There is a developing consensus that recent and current research efforts are providing knowledge about teaching and learning that can make a substantial impact on instruction.

Teacher Quality, Supply and Demand. Developing and maintaining an adequate supply of qualified and effective teachers continues to be a major concern and an area with much activity. Programs such as those proposed by the Holmes Group and the Carnegie Report are being reviewed, implemented, and debated. Many states, institutions, and schools are working on a variety of possible solutions.

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The Clearinghouse for Science, Mathematics and Environmental Education is located at Ohio State University, in Columbus, Ohio.

### Social Studies/Social Science Education (SO)

Discourse on social studies/social science education has been lively and sharp during the past year. Key terms in the debates have been core content, cultural literacy, and cognitive processes and skills.

Core Content in the Curriculum. Is there a body of knowledge in history and the social sciences that should be learned by all students? Should they be required to complete a core curriculum in the social studies? If so, what should be the content priorities of this core curriculum?

The National Endowment for the Humanities has strongly endorsed the idea of core curriculum for American students at all levels of education, which would include substantial exposure to studies in history and literature--basic elements of a common American heritage that all educated citizens should share (1). In James Madison High School: A Curriculum for American Students (1987), William J. Bennett proposes a core curriculum in social studies that emphasizes teaching and learning of history, geography, and civics (2).

Other current advocates of a core curriculum in the social studies include the Council for Basic Education, College Entrance Examination Board, Carnegie Foundation for the Advancement of Teaching, and the Education for Democracy Project of the American Federation of Teachers, the Educational Excellence Network, and Freedom House. The National Council for the Social Studies has established a National Commission to examine issues and make recommendations about a core curriculum in the social studies.

Several state departments of education have developed new curriculum guides to reflect new mandates and public interest in improving the quality of the content of the core curriculum in the social studies. For example, the History-Social Science Framework for California Public Schools (1987) established a core curriculum based on interrelated studies of history and geography with attention to civic values and studies of government.

Cultural Literacy. Advocates of a core curriculum are concerned about deficiencies in the cultural literacy of high school students which have been revealed by recent nation-wide assessments of knowledge. These studies indicate a serious lack of knowledge about history, geography, and civics, which suggests that students are deficient in cultural literacy--knowledge of key facts and ideas of a community (3, 4).

Recent assessments reported by the Geography Education Program of the National Geographic Society (5) indicate deficiencies in students' knowledge of place, location, and human/environment



interactions. These knowledge deficiencies have prompted proposals for content improvements in the core curriculum, which emphasize history, geography, and civics as basic contributors to development of cultural literacy.

The NEH report and the NAEP study (1, 3) recommend that all students, from all social backgrounds, should have an equal opportunity to develop cultural literacy--to learn knowledge essential for understanding their common culture and for performing capably within it.

Textbook studies conducted by The Education for Democracy Project (6) and the Educational Excellence Network (7) contribute to the argument for improving course content to advance cultural literacy. According to these studies, widely-used textbooks in world history, American history, civics, and government are bland, uninteresting, fragmented, and superficial. In particular, the books treat core ideas in Western civilization and the American heritage inadequately; principles and values of democracy are presented in a confused and sketchy manner.

Cognitive Processes and Skills. Controversies over cultural literacy and core content have stimulated a long-standing debate about the appropriate relationship of content to process in classroom instruction. These controversies have been reviewed by Cornbleth (8) and discussed in current literature on curriculum reform (1, 3).

One side of this controversy--taken by the most extreme critics of the cultural literacy/core content position--advocates the primacy of cognitive processes and skills, which should be the constant and essential elements of the curriculum. In this position, there is no essential knowledge; subject matter to which cognitive skills are applied might vary with the interests of students in timely topics, social problems, or public issues. Implementation of this position is supposed to develop generalizable skills that might be transferred pervasively to various subjects within and outside of school.

The opposing position holds that it is a fallacy to overemphasize cognitive processes and skills and to neglect questions about content priorities in the curriculum. Cornbleth's review of the research on critical thinking stresses the importance of connecting education on cognitive processes to core content in particular subjects, such as history, geography, and economics. Many studies have indicated that cognitive processes and core content are equally important and should be treated in concert.

Development of cognitive processes seems to be dependent upon particular structures of knowledge. Thus, subject-specific teaching of cognitive processes, such as critical thinking, may be the most effective means to build students' abilities to



transfer strategies and skills to similar subjects within and outside of school.

By contrast, the teaching of cognitive processes and skills generically, and independently of particular content, is likely to yield poor results in both acquisition and retention of knowledge and competence in higher-level cognition (8). Teaching cognitive processes and skills apart from mastery of particular bodies of significant content seems to yield rather low levels of knowledge and cultural literacy and little or no general transfer of learning.

Concluding Remarks About Trends and Issues. Major trends in social studies/social science education pertain to core content, cultural literacy, and cognitive processes and skills. These trends are associated with lively debates about curriculum reform. These debates reflect major items on the current agenda of curriculum reform in social studies/social science education. They pose fundamental challenges that are likely to engage the thoughts and energies of educators in the near future.

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The ERIC Clearinghouse for Social Studies/Social Science Education is located at Indiana University, Bloomington, Indiana.

### Teacher Education (SP)

Teacher Selection, Admissions and Enrollment. The quality, quantity and type of students that enter and exit teacher education programs have created a dilemma for those in higher education and for those responsible for staffing the nation's classrooms. An urgent need for the "best and brightest" to enter teaching is countered by the declining interest of college bound students in the fields.

There has been a precipitous decline in the number of students receiving bachelor degrees in education for well over a decade (1). While data indicate that the demand for new elementary and secondary teachers is expected to increase for the next several years, the number of newly certified teachers has not grown. The data suggest that we will be confronted with a profound shortage of teachers for the next five years and replacement teachers are arriving a approximately 50 percent of the rate needed to meet the demand (2).

The supply of minority teachers, especially Black and Hispanic, is inadequate and will remain inadequate unless greater numbers of students can be attracted to, and prepared for careers in teaching. Teaching's attractiveness to minorities has diminished for many of the same reasons as it has for white students; however, their participation is a least, if not more, crucial to the development of an equitable educational system. Poor salary structures, working conditions and the general attractiveness of other career areas have distracted students of all backgrounds. The college attendance rate for Black, Hispanic and other minority students is not consistent with their white cohorts (3), and when they do attend four-year institutions it is with a greater financial sacrifice (4).

Programs and proposals have been developed to encourage the participation of adults working in other occupations to teach. Prospective teachers include retirees from the military and other services. While some agree that recruits from this domain offer only a temporary solution to a long-term problem, others are more optimistic.

These alternative certification programs have as their primary mission the increase of the number of teachers, and the enrichment of classroom learning through experienced and knowledgeable personnel. Such programs are typically short-termed and comprehensive. While some educators remain skeptical of this approach for meeting the demand for good teachers, there is general consensus among schools of education that alternative certification programs should include, at a minimum: admission standards including a baccalaureate degree, assessment of subject matter competency, personal characteristics, and communication

skills; a curriculum that provides knowledge and skills essential to the beginning teacher; a supervised internship; and an examination which evaluates competency in the subject field and in professional studies.

Lastly, teacher education will thrive with changes in working conditions and in increased teacher salaries, brought about by the efforts of various policymakers and practitioners. These changing conditions, couched in the concept of teacher professionalism, are certain to affect the solution to a long-term problem.

Teacher Training. Of primary concern and debate in teacher education is, where and by whom teachers should be taught, and where and by whom their competencies should be assessed. Two reports issued during the past two years have had an enormous impact on these questions: Tomorrow's Teachers: A Report of the Holmes Group (1986) (5), and A Nation Prepared: A Report of the Carnegie Forum on Education and the Economy (1986) (6). Each report challenges the traditional teacher education system and calls for a full reconstruction of training programs. The Carnegie report, more so than the Holmes Group, calls for a restructuring of schools and for the provision of more independent and informed action on the part of teachers within the school.

Specifically, both the Carnegie and Holmes Group reports call for abandoning undergraduate teacher education programs and providing potential teachers with a sound liberal arts degree. This basic education would be coupled with a Masters in Teaching type program that would provide the appropriate level teaching methods and knowledge. There appears to be no compelling evidence that this approach is superior to the traditional program; however, some educators and legislators, recognizing a need for improvement, are willing to invest in and/or experiment with this approach.

Education reports such as that of the Holmes Group and Carnegie also contend that a knowledge base for teaching exists. The identification and adoption of a knowledge base that is effective and has universal applicability has been the focus of much research and discussion. Shulman contends that there is an "elaborate knowledge base for teaching" that is founded in scholarship in content disciplines; educational structures and materials; educational scholarship; and wisdom of practice (7).

The applicability of a legitimate knowledge base may be as difficult to determine as the identification of its content. For instance, a determination must be made as to whether general teaching knowledge is appropriate to all school subjects, or if there is subject-specific pedagogical knowledge that dictates separate courses or experiences. Additionally, should these

courses or experiences be further defined for special populations e.g., gifted and talented, or children identified as "at risk"?

**Assessment.** Another component of teacher education reform that has influenced enrollment is the assessment of potential teachers before, during and after the education cycle. Despite numerous questions regarding the veracity of teacher competency examinations, they are a reality for individuals expecting to enter the profession in 48 of the 50 states (8). The extent to which these tests gauge the skills and knowledge necessary to teach is questionable; nevertheless, many states respond to the demand for some measure of skill and ability and use the National Teachers Examination as a certification tool. Others, use their own customized instruments.

The Carnegie Foundation-sponsored National Certification Board is developing a national certification test that will be used in place of or in addition to state assessments. This new national test promises to judge competencies by different measures than utilized in the past.

**Inservice Education.** Until recently, inservice education focused primarily on providing the classroom teacher with information on new methods and products for specific teaching purposes. Presently, the education reform movement has forced a broader scope that includes consideration of the teacher as an independent professional, as a researcher, and as a mentor or master teacher to less experienced peers.

Financial incentive programs for "master teachers" and merit pay programs serve to encourage increased involvement in professional development activities. The prospect of recertification tests, such as in Texas and Arkansas, also prompt practicing teachers to stay current in their discipline and practice (9).

The broader view of the teacher as a professional has implications for the type of programs and materials that are offered inservice teachers. School/college collaboration have become more prevalent as a mechanism for enrichment of the classroom teacher as well as for the teacher educator. Educational labor unions have also become more cognizant of this new dimension and have organized workshops and materials around themes that feed this perspective.

#### NOTES

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  5. The Holmes Group, Inc. (1986). Tomorrow's teachers: A report of the Holmes Group. East Lansing, Michigan: Author. (ED 270 454)
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The ERIC Clearinghouse on Teacher Education is located at the American Association of Colleges of Teacher Education, in Washington, DC.



### Tests, Measurement, and Evaluation (TM)

Code of Fair Testing in Education. Consistent charges that test results are used unfairly have resulted in several proposals-- Truth-in-Testing legislation and the Golden Rule bias reduction principle--for testing reform (1). In a new activity to protect the rights of takers of standardized educational tests, a Code of Fair Testing in Education is being developed. The Code, developed by a joint committee of representatives of the American Psychological Association, the American Educational Research Association, and the National Council on Measurement in Education, will specify the essential principles of good practice that define the obligations of professionals who develop, administer, or use tests.

Sex Bias in Testing. Researchers continue to examine sex differences in test performance at all levels, but especially in college admissions testing, since college aptitude test scores declined steadily throughout the 1960's and 1970's (2). The trend of lower scores for females on college entrance examinations may indicate test bias which unfairly affects college admissions and scholarship awards.

Metacognition and Student Learning and Achievement. The term metacognition is used to describe the various aspects of the effects of self-knowledge and self-monitoring of cognitive processes on student learning and achievement. Research on metacognition shows that training students to monitor their cognitive processes can have an effect on student achievement and that tests based on modern cognitive theory can reveal new aspects of student thinking and performance (3).

Assessment of Higher Education. A recent wave of reports have pointed out serious problems in American higher education, and have triggered demands for increased accountability through assessment (4). Assessment can be interpreted broadly to include the use of measures to follow the intellectual and personal growth of students over time, the implementation of state-mandated requirements and their effects on students and programs, and student acquisition of skills, general educational attainment, attitudes, and values.

Educational Indicators for State-by-State Comparisons. Educational indicators are statistical input/output measures providing information on the health of the educational system, and most educators and researchers agree that the quality of national and state indicators must be dramatically improved. The lack of high quality data to describe, monitor, and compare U.S. educational systems has hampered reform decisions and school improvement efforts.

The Council of Chief State School Officers has recently assumed a national leadership role in the formulation of a set of national educational indicators, and a preliminary assessment program for student achievement, projected to begin voluntarily in some states in 1988-89, is under development.

At the Federal level, the Center for Education Statistics (CES) in the U.S. Department of Education recently redesigned the Elementary/Secondary Information Data System and is enlarging it with new survey data. The Study Group on the National Assessment of Student Achievement has recommended that the National Assessment of Educational Progress (NAEP)--the "Nation's Report Card"--be redesigned to include provisions for state-by-state comparisons of student achievement in core content areas (5,6).

Teacher Competency Testing. Every state except Alaska and Iowa has adopted, or is in the process of adopting, some form of teacher testing program (7). Although practitioners and researchers agree on the need for teacher evaluation, states differ dramatically in the way they define competence, in the methods they use to assess competence, and in the manner in which they treat teachers who do not meet competency standards. While some states support the development and implementation of a national proficiency examination (similar to a bar examination for lawyers), others favor state test development.

Teacher competency testing programs exist at three distinct levels: (1) before entrance into a teacher education program near the end of the sophomore year in college; (2) at the end of a teacher education program during the senior year in college or during the first year of teaching; and (3) for certification renewal as mandated by the state.

Assessing Higher Order Thinking Skills. The current educational reform movement continues to be concerned that students move beyond basic skills and into higher order thinking skills. Several states, including Connecticut, Florida and Michigan, have implemented assessment programs aimed at measuring the acquisition of higher order thinking skills, and textbook publishers and testing companies are becoming increasingly active in this area.

The Study Group on the National Assessment of Student Achievement strongly recommended that higher order thinking skills be a primary concern of future national assessments (8).

While there is no consensus on what precisely constitutes higher order thinking skills, the definition usually includes such notions as: a habit of reflective thinking; a willingness to think critically, assertively, and habitually; more difficult subject matter content; critical reasoning skills; and, other cognitive activities beyond straight recall or factual learning.

Researchers are not only debating the definition of higher order thinking skills, they are also examining whether these skills should be taught and tested as a separate subject area or embedded in content areas. Researchers are also examining: the extent to which current instruments measure higher order skills; the suitability of multiple choice tests for testing these thinking processes; how to set realistic standards for students with varying abilities; how to select test objectives from a broad domain; how to link test content to instructional programs; and, how to validate such tests (9).

#### NOTES

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2. Brown, D.C. (1987). Aptitude test score trends: 1959-1984. Washington, DC: National Center for Education Statistics. (ED 281 876)
3. Fielding, Glen (1987). Trends in integrating teaching and testing. ERIC Digest. Princeton, NJ: ERIC Clearinghouse on Tests, Measurement and Evaluation, Educational Testing Service. (ED 284 912)
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5. Ferrara, S.F. and Thornton, S.J. (1986). Using NAEP for State-by-State comparisons: The beginnings of a "National Achievement Test" and "National Curriculum": Guidelines and likely responses to aid instruction and achievement. Working paper for the Study Group on the National Assessment of Student Achievement. (ED 279 675)
6. Haney, W. and Madaus, G. (1986). Effects of standardized testing and the future of the National Assessment of Educational Progress. Working Paper for the Study Group on the National Assessment of Student Achievement. (ED 279 680)
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In 1987, the ERIC Clearinghouse on Tests, Measurement, and Evaluation was operated by the Educational Testing Service, in Princeton, New Jersey. In 1988, the Clearinghouse moved to the American Institutes for Research, in Washington, DC.

### Urban Education (UD)

Much of the literature on urban education reviewed in 1987 raises questions about the viability of urban schools. The fact that U.S. cities are increasingly populated by poor, youthful minorities, among whom unemployment, homelessness, crime, drugs, and teenage pregnancy are endemic, has placed new burdens on urban schools. Importantly, the historic division of labor between the family and the school no longer pertains.

Some observers suggest that for those students with either a single parent or two working parents who do not provide traditional family supports, the public schools simply may not be able to supply needed values and attitudes, and that these students might do better in parochial schools (1). Others focus on expanding the roles of the public school through collaborations and networks with other urban institutions (2).

The large number of students dropping out of school suggests to many that urban schools are failing. Nationally, approximately 21 percent of all Hispanics drop out of school between their sophomore and senior years, compared with 16 percent of all blacks and 12 percent of all non-Hispanic whites (3). However, these national data obscure a dropout rate as high as 60 percent in some urban school districts (4), and Hispanic dropout rates as high as 70 or 80 percent (5).

Students from households where adults have limited formal education, and are either unemployed or in low-paying jobs, are particularly at risk (6). Being overage, having a history of suspensions and expulsions (especially a problem with black males), being in a lower nonacademic track, and having lower standardized test scores and grade averages are also associated with dropping out (7). Finally, four out of five girls who become pregnant in high school drop out, compared with less than 10 percent of those who remain childless (8).

While some educators have asserted that the best dropout prevention measure is a strong job market, others advocate general school improvement as the best dropout prevention strategy. Nevertheless, schools around the country have instituted a number of discrete programs for dropout prevention: these begin at the preschool level and reach through secondary school. They include special pre-kindergarten programs for at-risk children; better monitoring practices; alternatives to tracking, suspensions, and retention; more sensitive counseling; and programs aimed at special populations--bilingual students, pregnant and parenting teenagers, and students with learning and/or behavior difficulties (9). Some programs, such as preschool and programs for pregnant and parenting teenagers are controversial, calling into question the traditional boundaries of the school.

Historically, one of the ways in which schools have tried to serve urban and minority populations has been through Title I and Chapter 1. New evaluations of compensatory education programs have tried to resolve long disputes both over the targeting of the services and their effectiveness. They show that the services are generally going to those poor and low-achieving students who most need them (10), and that they do enhance the performance of low-achievers, particularly in the early grades (11). However, the reports also question the effectiveness of the primary delivery method--pullout--and suggest that reduced class size and other general school improvement practices might be more effective (12).

From the workforce side, the growing problems of training and retaining urban teachers have also challenged the viability of urban schools. The teacher shortage, acute at a national level, is particularly serious in urban areas. Moreover, by the year 2000, when 50 percent of all urban children will be minorities, only 5 percent of all college students--the pool of prospective teachers--will be minorities. In fact, even if every minority college student became a teacher, minorities would still not be adequately represented among urban teachers (13). The preparation of an adequate supply of black teachers is particularly at risk since the loss of financial support to black colleges (14).

Drawing teachers to urban schools is also a matter of improving working conditions--the disruptions that hinder student learning make teaching more difficult in urban schools. Compared with suburban and rural teachers, urban teachers face more violence, have less control over textbooks and materials, experience more red tape, receive less administrative support, and suffer from poorer, dirtier, less secure school buildings (15). Unfortunately, proposals for reforming teaching have not directed their analyses or recommendations to the urban situation.

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14. Graham, P.A. (1987, April). Black teachers: A drastically scarce resource. Phi Delta Kappan, 68 (8), 598-605.
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The ERIC Clearinghouse on Urban Education is located at Teachers College, Columbia University, in New York, New York.

**APPENDIX 1: Directory of ERIC Clearinghouses (1988)**

# Clearinghouses (and Other Network Components)

The ERIC Clearinghouses have responsibility within the network for acquiring the significant educational literature within their particular areas, selecting the highest quality and most relevant material, processing (i.e., cataloging, indexing, abstracting) the selected items for input to the data base, and also for providing information analysis products and various user services based on the data base.

The exact number of Clearinghouses has fluctuated over time in response to the shifting needs of the educational community. There are currently 16 Clearinghouses. These are listed below, together with full addresses, telephone numbers, and brief scope notes describing the areas they cover.

## **ERIC Clearinghouse on Adult, Career, and Vocational Education (CE)**

Ohio State University  
National Center for Research in Vocational Education  
1960 Kenny Road  
Columbus, Ohio 43210-1090  
Telephone: (614) 486-3655; (800) 848-4815

All levels and settings of adult and continuing, career, and vocational/technical education. Adult education, from basic literacy training through professional skill upgrading. Career education, including career awareness, career decisionmaking, career development, career change, and experience-based education. Vocational and technical education, including new subprofessional fields, industrial arts, corrections education, employment and training programs, youth employment, work experience programs, education/business partnerships, entrepreneurship, adult retraining, and vocational rehabilitation for the handicapped.

## **ERIC Clearinghouse on Counseling and Personnel Services (CG)**

University of Michigan  
School of Education, Room 2108  
610 East University Street  
Ann Arbor, Michigan 48109-1259  
Telephone: (313) 764-9492

Preparation, practice, and supervision of counselors at all educational levels and in all settings; theoretical development of counseling and guidance; personnel procedures such as testing and interviewing and the analysis and dissemination of the resultant information; group work and case work; nature of pupil, student, and adult characteristics; personnel workers and their relation to career planning, family consultations, and student orientation activities.

## **ERIC Clearinghouse on Educational Management (EA)**

University of Oregon  
1787 Agate Street  
Eugene, Oregon 97403-5207  
Telephone: (503) 686-5043

The leadership, management, and structure of public and private educational organizations; practice and theory of administration; pre-service and in-service preparation of administrators; tasks and processes of administration; methods and varieties of organization and organizational change; and the social context of educational organizations.

Sites, buildings, and equipment for education; planning, financing, constructing, renovating, equipping, maintaining, operating, insuring, utilizing, and evaluating educational facilities.

## **ERIC Clearinghouse on Elementary and Early Childhood Education (PS)**

University of Illinois  
College of Education  
805 W. Pennsylvania Avenue  
Urbana, Illinois 61801-4897  
Telephone: (217) 333-1386

The physical, cognitive, social, educational, and cultural development of children from birth through early adolescence; prenatal factors; parental behavior factors; learning theory research and practice related to the development of young children, including the preparation of teachers for this educational level; educational programs and community services for children; and theoretical and philosophical issues pertaining to children's development and education.

## **ERIC Clearinghouse on Handicapped and Gifted Children (EC)**

Council for Exceptional Children  
1920 Association Drive  
Reston, Virginia 22091-1589  
Telephone: (703) 620-3660

All aspects of the education and development of the handicapped and gifted, including prevention, identification and assessment, intervention, and enrichment, both in special settings and within the mainstream.

## **ERIC Clearinghouse on Higher Education (HE)**

George Washington University  
One Dupont Circle, N.W., Suite 630  
Washington, DC 20036-1183  
Telephone: (202) 296-2597

Topics relating to college and university conditions, problems, programs, and students. Curricular and instructional programs, and institutional research at the college or university level. Federal programs, professional education (medicine, law, etc.), professional continuing education, collegiate computer-assisted learning and management, graduate education, university extension programs, teaching-learning, legal issues, and legislation, planning, governance, finance, evaluation, interinstitutional arrangements, management of institutions of higher education, and business or industry educational programs leading to a degree.

## **ERIC Clearinghouse on Information Resources (IR)**

Syracuse University  
School of Education  
Huntington Hall, Room 030  
150 Marshall Street  
Syracuse, New York 13244-2340  
Telephone: (315) 443-3640

Educational technology and library and information science at all levels. Instructional design, development, and evaluation are the emphases within educational technology, along with the media of educational communication: computers and microcomputers, telecommunications (cable, broadcast, satellite), audio and video recordings, film and other audiovisual materials, as they pertain to teaching and learning. Within library and information science the focus is on the operation and management of information services for education-related organizations. All aspects of information technology related to education are considered within the scope.

## **ERIC Clearinghouse for Junior Colleges (JC)**

University of California at Los Angeles (UCLA)  
Mathematical Sciences Building, Room 8118  
405 Hilgard Avenue  
Los Angeles, California 90024-1564  
Telephone: (213) 825-3931

Development, administration, and evaluation of two-year public and private community and junior colleges, technical institutes, and two-year branch university campuses. Two-year college students, faculty, staff, curricula, programs, support services, libraries, and community services. Linkages between two-year colleges and business/industrial organizations. Articulation of two-year colleges with secondary and four-year postsecondary institutions.

**ERIC Clearinghouse on Languages and Linguistics (FL)**

Center for Applied Linguistics

1118 22nd Street, N.W.

Washington, D.C. 20037-0037

Telephone: (202) 429-9551

Languages and language sciences; theoretical and applied linguistics; all areas of foreign language, second language, and linguistics instruction, pedagogy, or methodology; psycholinguistics and the psychology of language learning; cultural and intercultural context of languages; application of linguistics in language teaching; bilingualism and bilingual education; sociolinguistics; study abroad and international exchanges; teacher training and qualifications specific to the teaching of foreign languages and second languages; commonly and uncommonly taught languages, including English as a second language; related curriculum developments and problems.

**ERIC Clearinghouse on Reading and Communication Skills (CS)**

Indiana University, Smith Research Center

2805 East 10th Street, Suite 150

Bloomington, Indiana 47405-2373

Telephone: (812) 335-5847

Reading, English, and communication skills (verbal and nonverbal), pre-school through college; educational research and instruction development in reading, writing, speaking, and listening; identification, diagnosis, and remediation of reading problems; speech communication (including forensics), mass communication, interpersonal and small group interaction, interpretation, rhetorical and communication theory, speech sciences, and theater. Preparation of instructional staff and related personnel in these areas.

All aspects of reading behavior with emphasis on physiology, psychology, sociology, and teaching; instructional materials, curricula, tests/measurement, and methodology at all levels of reading; the role of libraries and other agencies in fostering and guiding reading; diagnostics and remedial reading services in schools and clinical settings. Preparation of reading teachers and specialists.

**ERIC Clearinghouse on Rural Education and Small Schools (RC)**

Appalachia Educational Laboratory

1031 Quarrier Street

P.O. Box 1348

Charleston, West Virginia 25325-1348

Telephone: (304) 347-0400

Economic, cultural, social, or other factors related to educational programs and practices for rural residents; American Indians/Alaska Natives, Mexican Americans, and migrants; educational practices and programs in all small schools; outdoor education.

**ERIC Clearinghouse for Science, Mathematics, and Environmental Education (SF)**

Ohio State University

1200 Chambers Road, Room 310

Columbus, Ohio 43212-1792

Telephone: (614) 292-6717

Science, mathematics, and environment education at all levels, and within these three broad subject areas, the following topics: development of curriculum and instructional materials; teachers and teacher education; learning theory/outcomes (including the impact of parameters such as interest level, intelligence, values, and concept development upon learning in these fields); educational programs; research and evaluative studies; media applications; computer applications.

**ERIC Clearinghouse for Social Studies/Social Science Education (SO)**

Indiana University

Social Studies Development Center

2805 East 10th Street

Bloomington, Indiana 47405-2373

Telephone: (812) 335-3838

All levels of social studies and social science education; content of the social science disciplines; applications of theory and research to social science education; contributions of social science disciplines (anthropology, economics, geography, history, sociology, social psychology, political science); education as a social science; comparative education (K-12); content and curriculum materials on "social" topics such as law, education, ethnic studies, bias and discrimination, aging, adoption, and sex education.

**ERIC Clearinghouse on Teacher Education (SP)**

American Association of Colleges for Teacher Education

One Dupont Circle, N.W., Suite 610

Washington, D.C. 20036-2412

Telephone: (202) 293-2450

School personnel levels: teacher selection and training, preservice and inservice preparation, and retirement; the theory, philosophy, and practice of teaching; curricula and general education not specifically covered by other clearinghouses; all aspects of physical education, health education, and recreation education.

**ERIC Clearinghouse on Tests, Measurement, and Evaluation (TM)**

American Institutes for Research (AIR)

Washington Research Center

1055 Thomas Jefferson St., NW

Washington, DC 20007-3893

Telephone: (202) 342-5060

Tests and other measurement devices; methodology of measurement and evaluation; application of tests, measurement, or evaluation in educational projects or programs; research design and methodology in the area of testing and measurement/evaluation; learning theory in general.

**ERIC Clearinghouse on Urban Education (UD)**

Teachers College, Columbia University

Institute for Urban and Minority Education

Main Hall, Room 300, Box 40

525 W. 120th Street

New York, New York 10027-9798

Telephone: (212) 678-3433

Programs and practices in public, parochial, and private schools in urban areas and the education of particular racial/ethnic minority children and youth in various settings — local, national, and international; the theory and practice of educational equity; urban and minority experiences; and urban and minority social institutions and services.

**Educational Resources Information Center (Central ERIC)**

U.S. Department of Education

Office of Educational Research and Improvement (OERI)

Washington, D.C. 20208-1235

Telephone: (202) 357-6289

**ERIC Processing & Reference Facility**

ORI, Inc., Information Systems

100 East-West Highway, Suite 1100

Bethesda, Maryland 20814-4475

Telephone: (301) 656-9723

**ERIC Document Reproduction Service (EDRS)**

Computer Microfilm Corporation (CMC)

3900 Wheeler Avenue

Alexandria, Virginia 22304-5110

Telephone: (703) 823-0500; (800) 227-3742

**Oryx Press**

2214 North Central Avenue at Encanto

Phoenix, Arizona 85004-1483

Telephone: (602) 254-6156; (800) 457-6799