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New Directions for Educational Research in India

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BACKDROP

Educational research in India can no longer be considered to be in its infancy. It has grown over a period of about five decades since the first thesis in education was accepted by Bombay University. It has undergone careful nurturing during the last four decades. If, in spite of this, it has not made an impact on the educational and social system, there is a strong case for looking afresh at the programme and practice of educational research in the country, which, it would appear, despite its long-standing has not shown evidence of maturity.

Looking back, it is seen that education made its first entry into the university portals in 1917 when a department of education was established in the University of Calcutta as had been recommended by the Calcutta University Commission. It was envisaged that the department would develop into a centre for studying the problems of education in a systematic way and in close collaboration with allied areas of study.

A second landmark in the development of education in the university set-up was in 1936 when the Bombay University instituted an M.Ed. course. In 1943, the first Ph.D. degree in education was awarded by Bombay University. The first attempt at providing facilities for educational research at the national level was made in 1947 when the Central Institute of Education (CIE) was established by the Government of India mainly to conduct research on educational problems and to offer advanced-level training to teachers and other educational personnel. It was envisaged that the institute would provide leadership to other institutions and would also collaborate with their staff to undertake research at all levels so as to enable decision-makers to modify educational programmes to suit the needs of a newly independent developing nation.

The establishment of the CIE in 1947 was followed in 1954 by the establishment of the Central Bureau of Textbook Research and the Central Bureau of Educational and Vocational Guidance in the same year. In 1956, the National Institute of Basic Education and the National Fundamental Education Centre were established—the latter was to work mainly in the area of adult education. In 1959, the National Institute of Audio-Visual Education was established. Thus, in the course of twelve years (1947-59), six institutes with built-in infrastructures to undertake education-related research were established. However, it was soon realized that these institutions functioned more or less in isolation. Though there was a need to look at education in a holistic way, it was being examined in fragments. The need was also felt to look at the three major dimensions of education, viz. research, training and extension, in an integrated way. As a result of this thinking, the National Council of Educational Research and Training (NCERT) was established on 1 September, 1961 as an autonomous organization incorporating within its fold the six institutes established earlier. The NCERT soon became the premier institution for educational research in the country. With its establishment as a central institution, it served as a model for the states and, gradually, State Councils of Educational Research and Training (SCERT)/State Institutes of Education came to be established in states and Union territories.

Besides the NCERT, there are several other national institutions devoted to educational research. Important among these are the National Institute of Educational

Planning and Administration (NIEPA), New Delhi, Indian Institute of Education (IIE), Pune, and Centre of Advanced Study in Education (CASE), Baroda. The IIE was set up entirely through voluntary effort and it is engaged in studying education in an interdisciplinary context. CASE is a university department engaged in teaching, research and extension.

STRENGTHENING THE KNOWLEDGE BASE OF EDUCATION

The document, 'Challenge of Education—a Policy Perspective', points out that periodical reviews of progress, programmes and shortcomings of the system are not enough; minor modifications of the educational framework are not adequate. 'The country now stands on the threshold of the twenty-first century', the document says. 'Those who are being born now will finish their elementary schooling at the turn of the century and enter into a world which will, it is already clear, offer opportunities unprecedented in the history of mankind to those who are equipped to cope with the future challenges and the accelerating pace of change.' Whether education can prepare the citizens to face this challenge will depend upon the quality of education the system generates.

The societal expectations of education are varied and many. Only a sound system with a strong knowledge base can meet the challenges that will be posed in the last decades of this century. An educational system with a weak knowledge base would be puerile and unfit to accomplish what is expected of it. Therefore, before any specific tasks are assigned to education, it is necessary to build and strengthen its knowledge base. Research results in the areas of education, philosophy, sociology, history, psychology and other social sciences provide the wherewithal to do so. Therefore, educational research has to be interdisciplinary and multidisciplinary.

Educational research in the country includes cross-area studies which provide a knowledge base for education. The three previous NCERT surveys of research in education provide ample evidence of such researches, though on a modest scale.

Psychology's contribution to developing the science of pedagogy is considerable. *The Third Survey of Research in Education* (Buch, 1986) records that, out of 319 Ph.D. thesis in the areas of 'Learning, Personality and Motivation', more than 50 per cent (164) were completed outside the departments of education, mostly in departments of psychology of Indian universities. Within psychology, research ranges across familial and cultural influences, classroom practices and cognitive psychology, and subject-matter learning. The researchers have sought to utilize advances in psychology for studying the developing human mind and the nature of effective environments for education. Learner differences have been studied by psychologists and the findings have thrown much light on individual differences in classrooms. The educationists have also benefited a lot from studies in differential psychology. The findings from studies on individual differences provide guidance to teachers in classroom teaching. Several decades of research on teaching document the distinctions that teachers can make in assessing the achievement of children. All process-product researches derive from the work of educational psychologists. Psychologists have explored the processes of thinking and problem-solving. These researches have applications not only in classroom education but beyond classroom settings also. Consistent with the findings of research on subject-matter learning, educational psychologists document the development of problem-solving skills, both as an integral part of learning within specific domains and also as general skills that enable learners to function effectively in various contexts. Teacher effects and school effects have been studied in the context of pupils' achievements, as also the personality correlates of pupils' achievement. Moreover, psychologists have studied intervention programmes in early childhood education, in the education of disabled children and of economically, socially and culturally deprived children, and these studies provide a frame of reference for educationists in policy making. Lastly, it is worth mentioning that psychologists have greatly benefited the knowledge base of education through their researches on exceptional and handicapped children and in the field of cognitive psychology.

The knowledge base of education has also been enriched by researches in the sociology of education by sociologists. A close scrutiny of researches in this field indicates that, out of 260 Ph.D. theses on the sociology of education up to 1983, as many as 144 (about 55 per cent) have been completed outside the university departments of education, mostly by sociologists and psychologists. Sociologists have studied education in social and societal contexts and have helped in understanding society's role in shaping education and vice versa. They

have examined the socializing influence of education by studying modernization in attitudes, values and behaviour of students, teachers and other adults in urban, rural and tribal areas. College and university students have been the target of these studies. The findings help educational administrators to plan education for rural and tribal areas and to take adequate steps for enrichment of educational programmes and for providing opportunities for the have-nots of the society. Education and polity, education and the stratification system, education of minority and backward groups, social factors behind educability, motivation, personality development and student activism have all been the subjects of study by sociologists.

The sociologists have further studied the issue of equality of educational opportunity and societal factors affecting the holding power of schools. Considerable work has been done to find out the sociological correlates of pupils' achievement. The department of psychology of Utkal University, the Centre of Social Studies at Surat and the Tata Institute of Social Sciences (TISS), Bombay, have studied the educational problems of culturally deprived groups. Their findings have been useful in planning educational programmes for disadvantaged children. As in the case of psychology, research findings in the sociology of education have enriched the knowledge base of education.

History, philosophy and economics are other social sciences which have strengthened education. The respective Indian Councils of Social Science, Historical and Philosophical Research (ICSSR, ICHR, ICPR) have contributed in the areas of the economics, history and philosophy of education.

The interdisciplinary and multidisciplinary nature of educational research necessitates the establishment of research institutes with multidisciplinary staff and an interdisciplinary programme of research. The beginning in this direction was made during the sixties through the establishment of such research institutes which, with a number of others, are now engaged in an interdisciplinary study of education.

Thanks to all these studies, there is today an adequate knowledge base to enable policy-makers to formulate educational policy on a firm base of research.

RESEARCH INSTITUTES

Amongst the national institutes devoted to education, the NCERT is the largest. Its main function is to act as a national-level apex body providing leadership in the formulation of programmes and policy of school education. Through appropriate researches and surveys, it generates adequate data, and through careful study and analysis of these it makes it possible to take decisions regarding school programmes and practices on an informed basis. It performs the dual role of assisting the Government of India in formulating educational policy and, once the policy is adopted, gearing-up its organization for development, training and extension for smooth implementation of the policy in the states.

The NCERT has a number of departments, units and cells covering all aspects of education, from early childhood education to non-formal education, primary education to teacher education, vocational and technical education to special education. There are departments of humanities and social science education, science and mathematics education, women's education, departments of examination and evaluation and tests and measurement. To utilize the benefits of rapid advances in educational technology, the NCERT has established the Central Institute of Educational Technology which is devoted to preparing educational TV (ETV) software for elementary schools, teachers' in-service education, and other educational programmes. Some of the noteworthy projects of the NCERT are the National Integration Project, Surveys of Education, Surveys of Research in Education, Comprehensive Access to Primary Education Project, Primary Education Curriculum Renewal Project, and National Talent Search. Every department/unit of the NCERT is engaged in research projects of smaller and larger magnitude. The council publishes research reports and provides financial assistance to researchers outside the council to publish their researches.

The National Institute of Educational Planning and Administration, New Delhi formerly known as the National Staff College for Educational Planners and Administrators, was established by the Government of India as an autonomous institution in 1970, taking over the Asian Institute of Educational Planning and Administration which had been set up in 1962 under a ten-year agreement with UNESCO. The main functions of the institute include training of educational planners and administrators; research; providing consultancy and advisory services, and diffusion of innovations. The institute organises training programmes in the area of educational administration, planning, educational finance, management of non-formal and adult education, etc. at international, national and sub-national levels. In international programmes, a large number of countries from Asia and Africa participate. During 1985-86,

65 participants from 23 countries attended NIEPA training programmes. At the national level the institute organizes diploma courses in educational planning and administration for District Education Officers. In 1984-85 a course leading to an International Diploma in Educational Planning and Administration was started. The institute's research studies cover areas like micro-level planning, universal elementary education, adult and non-formal education, management of educational change, equity in education, and institutional planning. These research activities are directed towards investigating the empirical situation in the field of educational planning and administration, at macro and micro levels, for purposes of generating knowledge and relevant data, and for providing feedback for considering policy issues and possible solutions to the field problems. The research themes are identified by experts committees constituted by the institute, national and state governments, academic and research organizations like the ICSSR and international organizations. Some of the studies completed during the last two years cover optimum teacher-pupil ratio in schools; educational policy and planning in India; the role of the Planning Commission—current status and future perspectives; impact of educational level on some dimensions of development; and rural households. The institute undertook a series of studies based on content-analysis of evidence, documents/communications of the reports of seminars as input in the formulation of the new education policy and core studies in the project, Indian Education in the Year 2000—a long-term perspective on primary education in India. Another project worth mentioning is the evaluation study on the non-formal education programme at the elementary stage in nine educationally backward states—Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Madhya Pradesh, Orissa, Rajashthan, Uttar Pradesh and West Bengal. An action research project has been going on in twenty villages of the Punhana block of the Mewat area which is educationally one of the most backward. Another research project has been undertaken in the field of higher education in selected colleges in Haryana to analyse the problems of development and efficient functioning of colleges. Recently, a scheme has been established of commissioning research institutions and individual researchers to undertake specific projects as per the requirements of the institute. A scheme has also been instituted to provide financial assistance for research projects in the area of educational administration and planning.

The Indian Institute of Education is a voluntary organization started in Bombay by a band of devoted educationists as early as 1948. After a short spell of activity the institute became dormant, but it was revived in 1976. Some of its major aims and objectives are (i) to conduct research in education, especially the relationship between education and society and education and development; (ii) to carry on research (including action research) and extension work in relation to various educational problems within and outside the formal educational system, including general education of the masses through social action; (iii) to conduct advanced-level training programmes especially for M.Phil and Ph.D. degrees in education, with an emphasis on a social-sciences input. The institute is supported by the Government of Maharashtra and the Indian Council of Social Science Research. Some of the projects completed or in progress are the action research project on universalization of primary education, educational reform in India 1921-80, a series of studies in the Marathwada region of the State of Maharashtra—Primary Education in Marathwada, Vocational Education in Marathwada, Educational Problems of Scheduled-caste Students in Marathwada, etc. and a project on the atrocities against *dalits*. The ICSSR has financed a project on social and economic factors in the family background of primary school children in the municipal school system in Pune. Some other completed projects include those on ashram schools in Maharashtra, the impact of technical education and industrial training on disadvantaged students, teaching of languages without the use of textbooks, learner evaluation in non-formal adult education, post-graduate employment experience of weaker castes in Marathwada.

In 1963, the UGC introduced a scheme for developing a limited number of university departments for advanced research and training in certain selected fields. The Department of Education of the Maharaja Sayajirao University of Baroda was recognized by the UGC in November 1963 as a research institution in education at the all-India level. The Centre for Advanced Studies in Education (CASE) completed 25 years of its existence in 1988. In the earlier years, during seventies, CASE concentrated on research in selected areas like teaching, teacher behaviour, skill-based teacher education using a micro-teaching approach, educational technology and programmed learning, innovations and educational change processes, leadership behaviour of

school principals, and organizational climates in schools, higher education, etc. Of late, CASE has taken up certain assigned projects, viz. evaluation of the UNICEF-assisted project—Comprehensive Access to Primary Education—of the NCERT; the Planning Commission financed project on Vocationalization of Secondary Education in Selected Regions, evaluation of the National Adult Education Programme (NAEP) in selected districts of Gujarat, etc. CASE has been organizing national seminars on crucial problems connected with education and educational research. Its most monumental contribution is its initiative in undertaking *A Survey of Research in Education* (1972)—a project which has been subsequently taken over by the NCERT as a continuing activity. The research activities of CASE have resulted in placement of its alumni as senior academics at various universities and apex-level research institutes.

Evaluation of the programmes of the centres of advanced study led the administrators to expand this project. The Programme of Action of the National Policy on Education (NPE) (1986) suggested that the programme of centres of advanced study and university departments receiving special assistance be further expanded and more funds provided for them. In pursuance of this recommendation, some more departments of education in a few more universities received support for research and training in specific areas. Mention may particularly be made of the departments of education of Himachal Pradesh University, Kurukshetra University, Kerala University, South Gujarat University, and SNDT University—Poona Campus.

The University Grants Commission is specially concerned with promoting interdisciplinary research. To achieve this, the commission set up a unit on Sociology of Education at the Tata Institute of Social Sciences, Bombay, and a unit on Economics of Education at the School of Economics of the Bombay University. The department of psychology of the Allahabad University got a unit on Social Psychology of Education and the department of psychology of the Utkal University was recognized as the Centre of Advanced Study in Psychology, with a major thrust towards educational psychology. These institutional expansions were further supported by research programmes related to education in research institutes sponsored by the ICSSR. Among these were the Institute of Social and Economic Change, Bangalore; the Madras Institute of Development Studies; the Centre of Social Studies, Surat; the Sardar Patel Institute for Economic and Social Research, Ahmedabad; and the A.N. Sinha Institute of Social Studies, Patna. A large number of studies related to education have been undertaken by these institutes. There are other institutes started by the government or voluntary bodies which occasionally undertake research in a specific area of education. Some of these are the National Institute of Public Cooperation and Child Development, Indian Space Research Organization, Tribal Research Institutes in various states, Gujarat Research Society at Bombay, and all the State Councils of Educational Research and Training, and State Textbook Boards.

The country has thus been able to build up a fairly good network of institutional infrastructure for undertaking research in education. The existence of this infrastructure, however, does not necessarily imply educational research of considerable quality or quantity. Some of the institutes are dormant and, in absence of expertise to undertake research, they have diverted their funds and energy to training and extension work of doubtful validity. Despite this criticism, it has to be accepted that, in such a large country, a stable base exists for planning and undertaking educational research. It is now possible to undertake large-scale experimentation in education which could not be thought of in the sixties.

The existence of voluntary research institutes has provided the needed flexibility for trying out innovative practices. The most outstanding example is the innovative science programme of Hoshangabad—clearly the outcome of the activities of a voluntary institution. The countrywide evaluation of the National Adult Education Programme was made possible because of these voluntary institutes. For nationwide collaborative research to be undertaken, excellent infrastructural facilities now exist. The need is for preparing educational research leaders through rigorous training. These leaders should not only be sound in research methodology but they should also have insight to perceive the educational problems in the country and provide leadership for research which would bring about needed reforms in the national education system. This is a challenge to leaders of educational research in the country.

PROMOTION OF RESEARCH THROUGH FINANCIAL SUPPORT

The Government of India was very much aware that

improvement of the educational system was possible only through the application of research findings. As a result, during the First Five Year Plan, the Ministry of Education initiated programmes to make teachers of colleges of education and university departments of education research-minded. Scheme 1-A was introduced, under which financial assistance was provided to approved research projects. It was continued during the Second Five Year Plan under the title, Scheme 2-B and also into the Third Five Year Plan, during which its function was taken over by the newly established NCERT in 1961. An effective strategy adopted by the Ministry of Education to create a research climate and develop research expertise was to organize national seminars on promotion of research in education. After 1961, the scheme was operated by the NCERT under the title,'Grant in Aid to Approved Research Projects'. At present, financial assistance is provided to institutions by the NCERT through the Educational Research and Innovation Committee (ERIC) which fixes priority areas for research and provides grants to approved projects. The researches financed by the NCERT are in the area of school education. ERIC used previously to screen the research proposals of various departments of the NCERT also, but this has since been given up. Apart from financial assistance to approved research projects, ERIC initiates centrally sponsored projects and assigns them to known research workers or well-established institutions. The NCERT also supports individual research scholars by awarding research fellowships. It extends financial assistance for publication of research reports, including Ph.D. theses. Thus the NCERT promotes research at two levels. Within the NCERT research is undertaken by its departments, regional colleges and even field officers; outside the organization, the NCERT finances approved research projects. Table 1.1 presents information on the number of research projects undertaken or supported by the NCERT.

Table 1.1

DEPARTMENTAL RESEARCH AND PROJECTS FINANCED BY NCERT

Period	*Departmental Research*	*Research Financed by NCERT*	*Total*
1961–65	10	16	26
1966–70	53	39	92
1971–75	40	38	78
1976–80	19	38	57
1981–85	56	59	115
1986–88 (March)	11	7	18
Total	189	197	386

The UGC is the biggest supporter of educational research in the universities. Really outstanding departments are recognized as centres of advanced studies. The UGC gives research fellowships to eligible scholars, provides grants to departments and scholars and supports publication of scholarly research. The publication of *A Survey of Research in Education* was partly supported by the UGC.

The Indian Council of Social Science Reserch is another national organization which supports social science research, including educational research of an interdisciplinary nature. During the last 25 years, there has been a rapid growth of research and training organizations in the area of the social sciences and humanities. At present, there are close to 200 research institutions, 90 per cent of which are supported by government. The Indian Council of Social Science Research, the Indian Council of Historical Research and Indian Council of Philosophical Research have supported research studies which have educational implications.

The ICSSR has set up twenty research institutions in partnership with state governments where considerable research competence has been developed. It has a scheme of financing approved research projects in other institutes and in universities also. It did pioneering work in initiating surveys of research in social sciences and undertook a nation-wide study of the problems of education of the scheduled castes and scheduled tribes. The main thrust of the council is to support collaborative research in interdisciplinary contexts. It provides grants for publishing good research reports and theses in the social sciences.

Apart from national organizations financing research, there are also a few international organizations that extend financial assistance to research projects of national and social significance in India. The UNESCO, UNICEF, Ford Foundation, and Netherlands Foundation are among the international bodies known to have supported national-level, large-scale

search projects.

It is evident from this review that there are in India a number of agencies to encourage and finance educational research. The same, however, cannot be said about training of research leaders though efforts have been made by the UGC, NCERT and ICSSR to do so. The NCERT used to have a regular programme of summer institutes in research methodology; the UGC supported such programmes; and the ICSSR had a well-planned programme of orienting young researchers. However, something more needs to be done about developing research leadership in education. Moreover, what is further lacking is a well-knit programme of monitoring and evaluating research activity. What is needed today is not proliferation of institutions but planned activities that would give greater stability and continuity to the progress of educational research and subject it to quality control.

QUANTITATIVE GROWTH OF EDUCATIONAL RESEARCH

Educational research began in this country when the Bombay University awarded a Ph.D. degree in education to Dr D.V. Chickermane in 1943 for his research entitled 'Factor Analysis of Arithmetical Ability'. Between 1943 and 1988, over this period of 45 years, there has been an explosive growth of educational research all over the country. It has been particularly impressive after 1960 and the decade 1971–80 saw the maximum number of Ph.Ds. emerge from the education departments of Indian universities. The main reasons for this stupendous growth during 1971–80 are the increase in number of universities offering facilities for educational research, the Centre of Advanced Study in Education attaining critical mass and turning out a steady output of doctoral scholars, the UGC's drive in supporting and encouraging research in all disciplines through the institution of research fellowships and teacher fellowships, the NCERT staff getting involved in guiding Ph.D. research and the ICSSR supporting interdisciplinary research in education in other social sciences departments. In all, by March 1988, 4703 research studies in education have been identified. These include Ph.D. theses completed in education departments, Ph.D. theses on educational problems completed in other disciplines, and non-degree-project research in universities and research institutes all over India. The growth of these three categories of research during the last 45 years and their contribution to the total research output provides interesting data for researchers.

Doctoral Degree Research in Education

The decade-wise distribution of Ph.D. theses in education is given in Table 1.2.

Table 1.2

DECADE-WISE DISTRIBUTION OF Ph.D. THESES IN EDUCATION

Years	*Number*
1941–50	10
1951–60	62
1961–70	216
1971–80	887
1981–88	1097
Total	2272

The first survey, *A Survey of Research in Education*, reported that there were 342 Ph. D. theses in education by 1973. In 1983, when the *Third Survey of Research in Education* was completed (published in 1986), there were 1423 Ph.D. studies in education departments. Now, by March 1988, the number has risen to 2282. As can be seen from the table, there has been a sudden spurt in the number since 1971. This trend is likely to continue as, in 1987-88, more departments of education have received special assistance for educational research and the NIEPA has also instituted a scheme of providing financial assistance to approved research projects.

There are certain universities which have produced a sizeable number of Ph.Ds. in education, The M.S. University of Baroda continues to occupy the position of leadership in educational research and innovations in education. Other universities that have made a significant contribution to educational research are Bombay, Punjab, Sardar Patel (Vallabh Vidyanagar), Kera-

la and Kurukshetra universities. The number of Ph.D. theses in education awarded by the top ten universities is given in Table 1.3.

Table 1.3

TOP TEN UNIVERSITIES WITH RESPECT TO NUMBER OF PH. D. THESES IN EDUCATION AS ON 31 MARCH, 1988

University	*No. of Ph.D.s in Education*
Agra University	42
Bombay University	145
Delhi University	70
Gorakhpur University	56
Kerala University	66
Kurukshetra University	80
M.S. University, Baroda	271
Panjab University	193
Patna University	43
Sardar Patel University	121
Total	997

It may be observed that these ten universities have together awarded 997 Ph. Ds. in education. This constitutes about 22 per cent of the total number of Ph. Ds. in education produced in the country. There are quite a few reasons for some of these universities occupying the present leadership position. The availability of facilities for research guidance, residential facilities for research scholars, good, motivating-research climate, location of the university, the feeder institutions and the status of the research guides among the educationists in the country, are some of them.

It is suggested that all these factors operate simultaneously in all the universities. Bombay University which awarded the first Ph.D. degree in education and which occupies a leading position in guiding educational research scholars did not have an education department till 1970. Yet the existence of a number of well-established colleges of education and research institutes like the IIE and the Gujarat Research Society motivated scholars to develop educational research in Bombay University.

A question is often raised about departments of education selecting specific areas in education and concentrating their energy, efforts and resources on studying only these selected aspects of education. In other words, a department may be known as specializing in curriculum research or research in science education or studies in school management. A casual study of the research output of the departments of education of various universities was not adequate to justify conclusive comments on this important issue. It was therefore decided to undertake an exercise in studying the dynamics of a research centre in a university in the context of educational research. The resulting profile would throw light on the factors promoting the research programme of the centre, the quantitative growth of educational research at Ph.D. level, the content of the problems selected for study and the factors contributing to building up the research climate in the department. The Centre of Advanced Study in Education (CASE) of the M.S. University of Baroda which turned out 271 Ph.Ds. in education during the period 1955 to 1987, excluding project research and also Ph.Ds. on educational problems from other disciplines/departments, was selected for such a study.

The Centre of Advanced Study in Education

The purpose of this study is not to evaluate the centre but to identify factors which help in building a learning climate in a research institute. The perceptions of teachers at CASE—both existing and those who have shifted to other institutions—and of research scholars who developed their research acumen at CASE, and introspection by the author, helped to identify these factors. Some CASE alumni have put down their perceptions on paper, from which the following conclusions are drawn.

1. The Centre of Advanced Study in Education was the erstwhile Department of Education of the M.S. University of Baroda, upgraded to the status of a centre of advanced study by the UGC in 1963. It was envisaged that CASE, in addition to performing its traditional roles as a university department, would provide leadership for conceptual as well as methodological advancement in the field of educational

research and develop itself into an institute of academic excellence at par with international standards. The mainstay of CASE has been a strong doctoral research programme supported by institutional research. The doctoral output of CASE is given in Table 1.4. It is evident from the table that there was a sudden spurt in research activities in 1971. The upward trend got reversed after 1980 and there was a slow and steady decline in the eighties. It is actually during the late seventies that the process of deceleration appears to have started.

Again the table shows substantial amount of research in four areas of research priority. These had been identified and teams of researchers had worked in these areas. The total amount of research in the selected thrust areas constituted about 38 per cent of the total research in CASE.

2. There is a major change in the output pattern of doctoral researches from 1971 onwards. The results obtained in 1971 and onwards are essentially of the research projects initiated some time in 1968-69. A major change was initiated in CASE in 1969 when a new leadership was inducted, the recruitment pattern of scholars and teachers radically changed, and programmatic research on identified thrust areas initiated.
3. CASE had identified four thrust areas where research effort was focused. The areas were (a) teaching, teacher behaviour, teacher education, (b) educational management, including innovations and change, leadersip behaviour of heads, organizational climate of institutions, teachers' morale, (c) educational technology including programmed learning, and (d) higher education. The concentration of research on these selected areas resulted in formation of groups of researchers who developed into teams pursuing common goals. These teams and the inter-team and intra-team interactions provided major inputs in the development of the research climate.
4. A second change introduced in CASE since 1969 was in the pattern of recruitment of teachers and research scholars. Great pains were taken by the leadership to recruit teachers from the all-India field. Research leaders were identified and their ability was evaluated in unorthodox ways before they were selected for positions in CASE. In keeping with this, research scholars were identified on a country-wide basis and toppers even of far-off universities were persuaded to participate in the major venture of building an educational research institute. Careful avoidance of regionalism, parochialism and in-

Table 1.4

RESEARCH OUTPUT OF CENTRE OF ADVANCED STUDY IN EDUCATION, BARODA

A. Research Output Since the Beginning in Five-year Spans

Period	*No. of Ph.Ds.*
1955–60	005
1961–65	008
1966–70	014
1971–75	053
1976–80	100
1981–85	071
1986–88	020
Total	271

B. Research Output on Identified Areas of Research Priorities

Teaching and Teacher Behaviour	061
Educational Management	042
Educational Technology	019
Higher Education	017
Total	139

C. Distribution of Research in Various Areas of Education

	Area	*Number*
(1)	Philosophy of Education	04
(2)	History of Education	08
(3)	Sociology of Education	04
(4)	Comparative Education	21
(5)	Economics of Education	01
(6)	Psychology of Education	13
(7)	Creativity	04
(8)	Guidance	05

(9)	Tests and Measurements	12
(10)	Curriculum	10
(11)	Language	08
(12)	Social Education	02
(13)	Science Education	09
(14)	Educational Technology	19
(15)	Correlates of Achievement	09
(16)	Examination & Evaluation	04
(17)	Teacher Education	40
(18)	Teaching	21
(19)	Educational Management	42
(20)	Nonformal Education	03
(21)	Adult Education	02
(22)	Preschool Education	01
(23)	Elementary Education	01
(24)	Vocational Education	01
(25)	Special Education	02
(26)	Higher Education	17
(27)	Women's Education	01
(28)	Education of Disadvantaged	07

breeding in selection and recruitment made CASE a rendezvous of researchers from all nooks and corners of the country. There was a period when 80 per cent of the states and Union territories were represented in CASE in its band of researchers. The 'living together', 'growing together' feeling provided fertile soil for interaction among themselves and with outside experts, making CASE a rare cosmopolite island.

5. Besides the natural interaction through working on common goals, situations were formally created to maximize inter-scholars and teacher–scholar interactions. Weekly seminars on research problems were initiated, where all scholars and interested faculty would discuss research problems, problems of methodology, innovative approaches in institution building, and so on. Each of such sessions was prolonged, extensively debated, and followed at times by individual feedback on performance in the seminars. Quite often, this formal interaction rolled over to informal settings.

   This learning environment and development was further supported by deliberate, planned opportunities created by CASE for the interaction of its research fraternity with outside experts. This interactive process in which outside experts interacted with young researchers was one of the important factors generating a research climate in CASE. The research scholars developed a high degree of confidence in placing their views before educational leadership at the national level.
6. On the initiative of the CASE leadership, the M.S. University removed the restrictive requirement that only a person with an M.Ed. could work for a Ph.D. in education. In the new dispensation work for a Ph.D. in education could be undertaken by any individual with a postgraduate degree in any discipline provided he or she had a proven interest in education. This widened the interactive forum and strengthened the multi-disciplinary approaches and thinking so critical to sound research in education.
7. The CASE leadership also contributed substantially to developing a stimulating research climate. In the erstwhile department of education, there were certain traditions which proved strong barriers to change. To put research on a sound base, one approach was to build a research base through a reorientation of the faculty. This is a legitimate approach but it has proved time consuming. The CASE leadership, in 1969, decided to create an alternative structure—to create a fresh research group of bright, young research students and teachers of merit having experience at the all-India level. As a result of this strategy, research activity clicked quickly and gradually, over a period of years, the senior faculty also got research oriented.
8. Research scholars in CASE got recognition for their work and achievement and everything possible was done to support their research efforts. A well-set-up library with a very helpful librarian, microfilms, microfiche and other reference material, links with computer centres for the researchers—all these helped to build a motivating climate where research thrived.
9. If the work on thrust areas had continued in a programmatic framework, there is no reason why CASE could not have developed into a national centre of studies in its selected areas on par with international research institutes.
10. In conclusion, it may be mentioned that research in a programmatic framework, recruiting the best, attracting the talented, opportunities to maximise interactions among scholars and teachers, cosmopoliteness, freedom to act, planned support services, recognition of scholars' merits and dedicated leadership—all these go to make a good research centre.

The educational research scene in the country does not present any research centre with expertise in a selected area. Gujarat University concentrated its efforts

on psychological tests and other measurement devices during the seventies but, in the absence of an adequate expansion of the department and inbreeding, it could not develop into a national centre in the area. The education department of yet another university focused on studies in reading, but the research developed horizontally, within department, rather than vertically, resulting in a stalemate after some time. The department also suffered from heavy inbreeding.

The National Policy on Education (1986) has proposed several challenging programmes for administrators to implement and researchers to study in support of new programmes, policy and practices. The universalization of elementary education is a challenge to a nation of 800 million. It has defied solution. And yet, the nation has not thought of establishing national centres for the study and development of universal elementary education. No academic from any university has concentrated his effort and energy on this issue. A voluntary body concerned with the problem does exist and does experiment in the area, but its size is small and it has not been able to attract young researchers to get involved in this all-important programme. The programmes of the NCERT have not been able to secure the commitment and involvement of state governments.

DOCTORAL RESEARCH ON EDUCATIONAL PROBLEMS IN OTHER DISCIPLINES

As discussed earlier, many researches in the disciplines of sociology, psychology, economics and other social sciences, in addition to those in education, have been instrumental in creating a rich knowledge base in education. These researches have studied education in an interdisciplinary context. It is evident from an examination of these studies that psychology and sociology have contributed the maximum to enriching educational research. History and economics occupy the third and the fourth positions. Researches on educational problems in other disciplines are welcome as they provide the benefits of the interplay of two or more disciplines and have a stronger conceptual base than unidisciplinary studies. There were, in all, 611 studies of this type up to 1983. During the course of the current survey, 406 additional studies were identified, of which psychology's contribution is about 40 per cent. Discipline-wise classification of studies in this category is presented in Table 1.5.

One of the reasons for the large number of studies on education in the disciplines of psychology, sociology etc. is, in a way, inherent in the very nature of education as a subject of study. It adopts in its concepts a multidisciplinary perspective, allows for interfaces with other disciplines and provides scope for them to undertake studies on educational problems. This inherent tendency has been heightened by the UGC's strong emphasis on interdisciplinary studies. In fact, the emphasis on interdisciplinary research was very much in evidence during the seventies at the national level. The ICSSR's project for studying the educational problems of the scheduled castes and scheduled tribes was undertaken almost entirely through departments of psychology, sociology and economics. As can be seen from Table 1.5, the discipline of psychology contributed 658 studies on educational problems in forty-five years. These studies were mostly in the areas of learning, personality, motivation, early childhood education, creativity, guidance and counselling, education of exceptional children and psychology of cognition. In the departments of sociology, the studies covered education for weaker sections of society, women's education, student activism and social change. Historians have studied the history of education in a city, a district, a state or a region. There are quite a few area studies and a few studies on subjects like history of science education and English-language education.

Table 1.5

DISCIPLINE-WISE AND DECADE-WISE DISTRIBUTION OF DOCTORAL STUDIES ON EDUCATIONAL PROBLEMS IN DISCIPLINES OTHER THAN EDUCATION 1943–88

Discipline	*No. of Ph.D.s*	*Decade*	*No. of Ph.D. theses in all disciplines other than education*
Psychology	658	1941-50	1
Sociology	124	1951-60	25
History	38	1961-70	178
Economics	27	1971-80	429
Others	170	1981-88	384
Total	1017		1017

Project Research

Conducting research for solving educational problems rather than just for gaining a degree or securing a research grant has not attracted many researchers in India. Even proposals for research projects from institutions seeking grants are often motivated by a desire to improve the status of the institution concerned rather than a desire to probe the reasons for the educational malaise in the country and recommend measures to overcome it. While one might condone such an attitude on the part of a department of education of a university, it is certainly expected of centres of advanced studies in education and research institutes. Such centres are expected to identify crucial educational problems and attempt to provide research-based solutions. Research projects aimed at providing answers to educational problems must be at a higher level than degree-oriented research activity. If, for some reason, academics are not initiating research proposals on challenging issues, it is imperative that the national leadership in education in decision-making positions, viz, the NCERT and the NIEPA, should identify research expertise and commission it to undertake research on identified problems. This is not an altogether new modality. During the sixties, the NCERT did commission individuals and institutions to undertake cooperative research. The Development Norms Project is an example. In the late sixties and early seventies, the ICSSR identified crucial areas of social research and commissioned a number of departments of psychology, sociology, economics, political science and also voluntary research institutes to inquire into the educational problems of the weaker sections of the society. The monumental work on the educational problems of the scheduled castes and scheduled tribes is an example of research of this category. During the eighties, the Ministry of Education and Social Welfare commissioned a number of university departments and voluntary research institutes to undertake evaluation of the National Adult Education Programme. This modality of research sponsorship needs further emphasis.

Project research places a heavy responsibility on apex-level national institutions for identifying problems for cooperative research and for seeing that the research-based solutions are implemented. They will have to play an active academic role rather than act only as the managers of the project.

Project research on a very modest scale started practically side by side with degree-oriented research in universities. The total number of non-Ph.D. research studies in education through to 1970 was 358, by 1980 it was 984 and by March 1988, it was 1414. If project research has increased significantly, it is also true that the number of non-university institutions undertaking non-degree research has also increased. Table 1.6 gives decadewise distribution of project research.

These non-Ph.D. studies have been carried out by various categories of social scientists—not only educationists—from university departments, state-managed agencies and voluntary research agencies. Most of these were projects submitted by researchers for financial assistance either to the NCERT, ICSSR, UGC, state governments, or other national and international agencies. A cursory perusal of the reports of many of these studies does not indicate the academic rigour seen in good theses but they do show greater concern with relevant, practical aspects of the problems under study. During the last decade, a large number of problems were handed out to identified research institutes by the governmental agencies. This also accounts for the increase in number of studies, to some extent.

Table 1.6

DECADE-WISE DISTRIBUTION OF PROJECT RESEARCH IN EDUCATION

Year	*No. of Studies*
1941-50	1
1951-60	59
1961-70	298
1971-80	626
1981-88	430
Total	1414

Note: A number of studies which were not identified at the time of earlier surveys are now included in this table.

A study was made of the agencies involved in this kind of studies and the areas in which research was undertaken by them. The voluntary agencies undertaking project research either from their own resources or from grants received from governmental agencies are not many, considering the size of the country. These agencies receive block grants either from the state government or the institutions like the ICSSR. All of them are registered societies or public trusts. Some of them are the research institutes started by the ICSSR while others receive grants from governmental agencies. Three professional associations have also undertaken

research projects. They are the Indian Association of Adult Education, the Educational Research Committee of the South India Teachers Union, and the Association of Indian Universities. One agency in Pune undertaking educational research projects is the Gnan Prabodhini—an institution known for catering to the educational needs of the talented; another institute is Mouni Vidyapeeth at Gargoti. The Society for Educational Research and Development at Baroda also undertakes project research.

Researches are also undertaken by the NCERT and NIEPA themselves, in addition to providing financial assistance to approved research projects. The NCERT has also undertaken several studies in its Regional Colleges of Education. Reports of 31 NCERT projects completed during 1983-88 were available on 31 March, 1988. A number of projects were in progress. Reports of 21 projects completed by the researchers of the NIEPA were available on 31 March, 1988. Some major national projects like 'The Management of Educational Change' were in progress.

Apart from the national institutes, almost all SCERTs and SIEs in the country are supposed to undertake research though not all have the required expertise to do so. The SCERTs of Haryana, UP, Assam, Rajasthan, Andhra Pradesh, Gujarat, Kerala, Tamil Nadu, Maharashtra, Karnataka and some other states and Union territories have, at one time or another, taken up and completed projects. Researches in the SCERTs are, by and large, in elementary education.

It is essential that this category of research be further strengthened in quantity and quality and used to influence educational policy and practice. Improving quality through training and providing guidance to workers is even more necessary as, during the next few years, a large number of District Institutes of Education and Training are proposed to be established.

QUANTITATIVE PICTURE OF RESEARCH IN DIFFERENT AREAS OF EDUCATION

Education is a multidisciplinary subject, unique in its interface with the natural sciences and social sciences, and with various disciplines under the humanities. As a subject of study, education, being in a state of flux, is evasive. Neither are its boundaries well demarcated nor are its content areas distinctly defined. Any effort to classify educational research invariably involves overlapping, and results in vagueness, confusion and controversies.

The three earlier surveys of research in education had followed a system of classification which had proved adequate then. During the third survey, a claim was made by language educators for an independent place in the classification. Similar claims were made by other professional groups. The whole scheme of classification was therefore reviewed and it was decided to give an independent place to all areas where there was substantial research. It was also decided to subdivide sociology and give independent positions to women's education and education of disadvantaged children. Creativity received increasing attention from researchers and a substantial number of studies were seen in mathematics and science education. All these resulted in a revised scheme of classification of studies as seen in Table 1.7. Even this revised system did not solve the problem of classifying research that had an interface with more than one area. A case in point is the study 'History of Science Curriculum in Indian Universities'. Should this be put in the area of history? Should it be classified with curriculum studies? Should it be categorized with studies in science education? Or should this study be classified as belonging to higher education? A unilateral classification would confuse the issue and raise controversies. In view of this, a multi-classification system was proposed to enable classification of a study into more than one category if needed. For placement of the abstract, the procedure decided on was to study the objectives of the study, identify the major objective and place the abstract in the chapter relevant to that objective. Applying this criterion, the above-mentioned study would be put among the abstracts of 'science education', but it would also be cited under 'history of education', 'curriculum', and 'higher education'. Table 1.7 presents the analysis of research on the basis of studies as they are placed in relevant chapters. The studies included in the earlier surveys have been reclassified under the 29 new areas. In each area, the studies have been further classified as theses in education, theses on educational problems from other university departments, and non-Ph.D. research projects. The multiple classification system has been used for distribution of the abstracts in various chapters.

A careful perusal of the Table 1.7 indicates that there are considerably more research studies on the foundations of education, viz., Philosophy of Education, History of Education, Sociology of Education, Economics of Education and Psychology of Education. They constitute about 43 per cent of the total number of studies.

Table 1.7

AREAWISE CLASSIFICATION OF EDUCATIONAL RESEARCH

Sl. No.	Area	Doctoral Studies		Projects	Total
		Education	Other Subjects		
1.	Philosophy of Education	106	23	1	130
2.	History of Education	88	48	10	146
3.	Sociology of Education	140	168	78	386
4.	Comparative Education	72	17	5	94
5.	Economics of Education	27	31	43	101
6.	Pyschology of Education	196	240	50	486
7.	Creativity	82	43	12	137
8.	Guidance & Counselling	52	31	32	115
9.	Tests & Measurement	92	85	63	240
10.	Curriculum	68	20	51	139
11.	Language Education	130	32	88	250
12.	Social Science Education	20	0	16	36
13.	Mathematics Education	52	0	16	68
14.	Science Education	74	2	25	101
15.	Educational Technology	76	3	46	125
16.	Correlates of Achievement	140	57	30	227
17.	Evaluation & Examination	81	14	112	207
18.	Teacher Education	221	21	128	370
19.	Teaching	83	7	18	108
20.	Management of Education	196	25	128	349
21.	Non-formal Education	24	5	20	49
22.	Adult Education	30	5	73	108
23.	Early Childhood Education	14	12	37	63
24.	Elementary Education	32	6	90	128
25.	Vocational & Technical Education	10	8	27	45
26.	Special Education	16	15	21	52
27.	Higher Education	73	57	94	224
28.	Women's Education	27	12	17	56
29.	Education of the Disadvantaged	50	30	83	163
	Total	2272	1017	1414	4703

Studies in the areas of Psychology of Education, Creativity, Guidance and Counselling and Tests and Measurement constitute about 23 per cent of the studies. Though, on the one hand, this indicates the interdisciplinary nature of education, on the other, it reveals a sort of indifference among educational researchers to the study education as a subject. Educational researchers lean heavily on psychologists for selecting problems for exploration. This, however, has certain advantages too. Increased research on educational problems belonging to dual disciplinary areas is helpful in creating and strengthening the integrated knowledge-base of education which has been discussed elsewhere in this chapter. However, if research is not undertaken with an accepted interdisciplinary approach, these researches in dual disciplinary areas may not yield constructive returns.

Secondly, one would expect educationists to explore such aspects of education as educational theory, educational practice, curriculum, methods of instruction, educational alternatives, crucial issues in language education or conceptual development through mathematics education. The Table 1.7 shows that studies in some of the areas are too few to enable generalizations. There is no study in the area of educational theory. No well-planned study is seen in educational alternatives. The few studies that are there, do not touch crucial aspects in non-formal education. The studies describe the existing position but do not elucidate the problem. The problems selected are irrelevant, trivial, non-challenging and the completed researches yield findings 'which are usually known'. The society looks upon educationists to tell them what their children should learn. In other words, the child's curriculum is the concern of the parents. Of the total number of studies, those in the areas of curriculum, textbooks, language education, social-science education, mathematics education, science education and educational evaluation, and examination constitute only 17 per cent. This is disappointing. Educational researchers do not seem to be drawn to these areas, and if some studies are undertaken, they are descriptive surveys, and again on such problems as are not relevant for developing sound educational policy or practice.

Two core areas which have received adequate attention are 'correlates of achievement' and 'educational management'. All interested in education are interested in studying the variance in children's achievement and the conditions/factors responsible for it. Studies in this area are numerous but are repetitive. As a result, the canvas of studies has remained limited and a fairly scientific generalization has not been possible. However, efforts should be made to analyse the findings so far and plan further studies on the basis of the review. The same holds true for studies in management. Institutional climate has been widely studied. What next? What do the findings say? Innovations and educational changes have been studied by about a dozen researchers. The major project on 'Management of Change' by the NIEPA will soon be completed. It would be worthwhile to take stock of the studies and review the relevance of the findings for initiating and monitoring educational

change at the national, regional, state and institutional levels.

Some 4,700-odd researches represent the efforts and energy of thousands of researchers during the last half century. If researchers have selected the same problem and used the same methodology without productive results, it should be a matter of concern to all connected with educational research. It is time to look back and review the whole modality of selecting problems, planning research, building up rigour in methodology and applying findings to the educational restructuring efforts.

AREAWISE REVIEW

The researches over the last five decades have been classified into twenty-nine areas, as has been indicated. In each area the growth of research decade-wise has been traced. Growth has been studied in terms of theses in education, theses in other subjects and research projects. The area-wise review aims at presenting a broad spectrum of research in each area followed by general observation. The objective is to identify the emergent trend from the work done in each area. Detailed analysis of research in each area has been made by experts in the specific area.

Philosophy of Education

India has a rich tradition of philsophical thought. One would naturally expect substantial research in this area of education in Indian universities. However, the position is different, as is evident from the decade-wise report of research studies presented in Table 1.8.Very few studies were completed at the Ph.D. level and only one project was taken up over five decades. This constitutes only 2.7 per cent of the total research in education. Qualitatively, the nature of the problems studied is more depressing.

The obvious reason for this is that research in this area demands a deeper level of thinking and clarity in articulation of one's ideas—which is not that easy—than in other areas that depend more on empirical data and their interpretation. The coverage of researches in this area also appears to be inadequate. Some researchers have been concerned with the educational thought of sages like Rabindranath Tagore, Swami Vivekanand, J. Krishnamurthi, Annie Besant and M.K. Gandhi, making comparative studies of these thinkers. Another group of studies deals with thematic research and educational thought of religious and philosophical systems. Very few have taken up a particular function or concept of the system, e.g. the concept of freedom or of creativity, and studied it within the thought process of the thinkers. Hardly any researchers have taken up problems related to the Indian society or Indian classrooms and studied them in depth. Two studies which did do so were reported in the third survey (Seshadri 1980, and Shastri 1980) and merit mention here also. One studied the problem of equality of educational opportunity, and the other the relationship between philosophical belief and classroom behaviour of teachers. Such studies have relevance because they attempt to provide explanations for a number of educational problems faced by the country. Studies of this type are especially needed today when the country has adopted a new education policy and the whole nation is concerned with national goals of education, a new curriculum, and professionalism among teachers. Seshadri has pointed out, and rightly, that various kinds of issues like concepts of national education, child centred-education, lifelong education, Navodaya Schools; and issues concerning teachers and the teaching profession, its accountability, appraisal etc., will pave the way for the emergence of strategically sound programmes of practical action.

Table 1.8

DECADE-WISE GROWTH OF RESEARCH IN PHILOSOPHY OF EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	2	0	0	2
1951–60	11	1	0	12
1961–70	11	5	0	16
1971–80	34	10	0	44
1981–88	48	7	1	56
Total	106	23	1	130

The philosophy of education thus appears to be a rather neglected area of study and research, The expectation that it would receive more attention after the establishment of the Indian Council of Philosophical Research has been belied. The need is to kindle the spirit of inquiry into the validity of accepted educational objectives and the corresponding curricula at all

stages of education. Without a strong and well rooted base in Indian philosophical thought, the education system will be rudderless. Lack of clarity on the question of inculcating values among schoolchildren is causing concern. To tackle this and other issues, the need is to establish a close link between the philosophy of education and the national system of education. Such a link would provide direction for future research workers in philosophy of education.

History of Education

Research in the history of education dates back to the late forties of the present century when two Ph.D. theses were accepted by the Bombay University in 1949. One was a sectoral study on promotion of learning in Kashmir during the Hindu Period—273 B C to A D 1339. The second was a study on women's education in the then Bombay province. One more study came out during the same decade (1941–50). The progress of research in the history education over the last five decades is given in Table 1.9.

Table 1.9

DECADE-WISE GROWTH OF RESEARCH IN THE HISTORY OF EDUCATION

Decade	*Ph. D. Theses in*		*Research*	*Total*
	Education	*Other Subjects*	*Projects*	
1941–50	2	0	0	2
1951–60	7	1	0	8
1961–70	16	17	1	34
1971–80	43	20	8	71
1981–88	20	10	1	31
Total	88	48	10	146

It is evident from the table that research in this area grew rapidly after 1960. The decade 1971–80 saw the maximum number of studies. From 1981, there was a decline. During the last five years, a historical survey of educational administration and a study on science education in colonial India are notable additions to the research pool in the history of education.

In the early years, i.e. the first two decades, the focus was on the history of education at the national level. During the last two decades, researchers have started studying education in the states and Union territories in historical perspective. Thus practically all the states of India have been studied in the context of the development and growth of education up to 1988. The exceptions are Himachal Pradesh, Haryana and Pondicherry. From state studies the researchers moved to district studies and quite a few are available. Some of these are studies of Ratnagiri and Dhule in Maharashtra, Kaira in Gujarat, Jabalpur in MP and Kumaon and Garhwal in UP. A notable feature of research in this area is the educational development studies in some border states and territories like those of Nagaland, Manipur, Tripura, Mizoram, Sikkim and Assam including Meghalaya. Apart from these studies, during the last five years, researchers have studied the history of education in selected cities, e.g. Bombay, Jabalpur, Varanasi and Delhi.

The general trend has been to undertake more micro-level studies which provide useful data regarding factors affecting educational growth in a compact locality. While discussing the gaps and priorities in research in the history of education, Professor A. Basu has rightly pointed out that there is no systematic study of the education of Indian Muslims or Jains or Parsis. The Indian Council of Historical Research could perhaps sponsor interdisciplinary research projects on subjects like education and Sanskritization in a historical perspective, education movements among the working classes and other related areas in the history of education.

Sociology of Education

Research in this area got a boost with the establishment of the NCERT in 1961 and the ICSSR in 1968. The sociology of education has, to a considerable extent, been studied in departments of psychology in addition to studies in departments of education and sociology. The NCERT sponsored a national study in the field covering eight states. The ICSSR sponsored more than forty-five studies through university departments of sociology and psychology of the educational problems of scheduled castes and scheduled tribes. The UGC sponsored a special unit on the sociology of education in the TISS and a unit on the social psychology of education in the department of psychology of Allahabad University. The impact of these developments is seen in the number of research studies in the area growing from decade to decade.

Table 1.10

DECADE-WISE GROWTH OF RESEARCH IN SOCIOLOGY OF EDUCATION

Decade	*Ph. D. Theses in*		*Research*	*Total*
	Education	*Other Subjects*	*Projects*	
1941–50	0	0	0	0
1951–60	1	2	4	7
1961–70	13	26	16	55
1971–80	55	67	44	166
1981–88	71	73	14	158
Total	140	168	78	386

A cursory look at 386 studies over the last five decades shows a discernible trend. In the earlier decades, scholars mainly focused their studies on socio-psychological variables and exploring relationships between them. In course of time, the studies shifted their concern to interpersonal as well as national problems. In recent years, social scientists have studied the education of the minorities, student activism, politicization of students and teachers. The minorities studied are religious and social. The educational problems of tribals in Khasi and Jaintia hills, Orissa, Bengal and Bihar have been investigated. This is a welcome trend. These studies are directly linked with the ongoing efforts for strengthening national integration. The other area of increasing concern is the politicization of education and educational personnel. Student activism all over the country and the recent nation-wide strike of university and college teachers are pointers to the fact that researchers have not adequately studied these problems and administrators have not attempted research-based solutions. The philosophers, the sociologists and educational administrators have a common responsibility for studying the problem of universalization of primary education and implementing measures to achieve it. Lastly, the establishment of such national institutions as the Indira Gandhi National Open University (IGNOU) and Navodaya Vidyalayas, and state-level women's universities will have a great impact on our social life. It is important that impact studies are planned well in advance.

Comparative Education

The area of comparative education has not attracted many researchers. Whatever researches there have been in Indian universities are mostly the Ph.D. theses of foreign students who did their doctoral studies in India. The reason for this is that most Indian universities do not offer any specialization in comparative education. There is a lack of expertise in this area. If post-graduate scholars take up comparative education studies, they have to do so on their own, getting no guidance in research methods in comparative education. Again, Ph.D. scholars find it a major problem to collect cross-cultural data even within India because of language problem and financial constraints. The result is a poor show of really good research in this area. Table 1.11 gives a picture of the amount of research in comparative education during the last five decades.

A careful analysis of research done so far indicates that studies have been completed with respect to coun-

Table 1.11

DECADE-WISE GROWTH OF RESEARCH IN COMPARATIVE EDUCATION

Decade	*Ph. D. Theses in*		*Research*	*Total*
	Education	*Other Subjects*	*Projects*	
1941–50	0	0	0	0
1951–60	0	0	0	0
1961–70	1	1	0	2
1971–80	24	4	4	32
1981–88	47	12	1	60
Total	72	17	5	94

tries like the UK, USA, USSR, Thailand, Bangladesh, Nepal, Iran, the Philippines, Yemen and others. Studies comparing the educational systems of the UK, USA and USSR are mostly library studies. Studies of various aspects of education in countries like Thailand and Bangladesh have been done by scholars from these countries doing their doctoral research in Indian universities. These studies are methodologically weak and have been conducted on samples selected non-scientifically. In quite a few cases the instruments used are heavily culture-loaded and provide data of doubt-

ful validity. The research work is often of a trivial nature and the methodology not viable for comparing the education systems of two different cultures.

There are, however, few studies which merit mention. The project by Kerawala (1979) on language problems and policies in India and the USSR, is one of the most systematic studies of the subject and provides an appropriate model. It may be noted that this study was not undertaken towards a degree. It was financed by NCERT. Similarly, the study by Chilana (1973), comparing programmes of in-service education of primary teachers in India and the Philippines was an empirical study where the researcher spent about a year in the Philippines to collect data.

The more important of the research priorities identified by the author of the trend report in this volume are cross-cultural studies of education systems and educational problems of India and our neighbours like Pakistan, Nepal, Bangladesh, Burma, Sri Lanka and China. These must be sponsored by the ICSSR, NCERT, UGC and even private education foundations. It is very necessary that the Indian people are made aware and kept abreast of the educational development and educational problems of our neighbours, with whom we have to interact continuously.

Economics of Education

This review of research in the economics of education follows the first three surveys in this series and the ICSSR survey of educational research. There has been a steady growth in the number of studies in this area since the sixties. The author of the trend report below is of the view that the entire period spanning the sixties and seventies reflected an increasing awareness of the economic dimensions of education. He has developed a thematic review of researches in the area under four major themes, namely; 1. Education—economic interdependencies; 2. Education and socio-economic equality; 3. Problems of educational finance; 4. Planning and management in education. Regarding the first theme the author has examined about fourteen studies completed in the period 1978–86. The effect of education on the socio-economic status of the individual and the economy and the implications of socio-economic status for education and the concomitant policy decisions have been discussed. In the second theme, namely, education and equality, the author has raised some of the major questions in the field, linking education with the goal of equality. Some of these questions are: To what extent does education contribute to socio-economic equality? To what extent can the equalization policy be tagged to the personal status of the aspirants for education? Can such policies be formulated once and for all, or should there be flexibility with policies reassessed at regular intervals? Under the fourth theme, the author of this trend report has discussed some of the issues in management of institutions in the educational sector. The author is of the view that there is absence of serious planning as is evident from the haphazard expansion of education; indifference to the question of course-content, inadequate availability of resources for the educational sector, etc. There is a feeling that research studies in this field have not made any impact. Even with regard to institutional planning and management, the research efforts are only a few in number, though this area provides ample scope for innovative approaches.

It is seen that there was a general lull in research in the economics of education during the last decade. There are only a few active research projects in the area and most of them are by research institutes and apex organisations like the NIEPA and not by universities.

Table 1.12

DECADE-WISE GROWTH OF RESEARCH IN ECONOMICS OF EDUCATION

Decade	*Ph. D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	1	0	2	3
1961–70	2	7	7	16
1971–80	7	14	22	43
1981–88	17	10	12	39
Total	27	31	43	101

Giving the overall observations, the author feels that an impression has been generated that the studies conducted in the economics of education have followed the well-charted path, with more or less similar methodology, and similar focus and emphasis, except a few studies which had an innovative approach and unconventional methodology.

It is a matter of concern that most of the studies are statistics-oriented, lacking an innovative approach in

developing a conceptual framework for compiling the statistics. There are hardly any conceptual studies. With this increasing (deplorable) neglect of conceptual aspects of the problem, Panchmukhi cautions against the danger of impoverishment that threatens the discipline of education in general and the economics of education in particular. There is optimism as the number of studies have comparatively increased in recent years. There is disappointment as the quality of studies has not improved. Panchmukhi has highlighted the limitations of the studies, rather than suggesting any particular remedy.

Psychology of Education

In the earlier surveys, studies in this area were grouped, under the heading, 'Learning, Personality and Motivation'. With the increasing variety of research in this area, it was not possible to place all researches under the same heading. It was, therefore, decided to broaden the scope of this section under the heading, 'Psychology of Education'. Since the time when Bombay University awarded its first Ph.D. in education in 1943, as many as 486 studies in this area have been completed. Of these studies, 240 have been studies from departments other than those of education. The decade-wise growth of studies is presented in Table 1.13.

Table 1.13

DECADE-WISE GROWTH OF RESEARCH IN PSYCHOLOGY OF EDUCATION

Decade	*Ph. D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	5	7	0	12
1961–70	15	27	9	51
1971–80	64	111	31	206
1981–88	112	95	10	217
Total	196	240	50	486

On the psychology of education, against 196 studies in education departments, there were 240 completed in other departments (mostly the departments of psychology) in addition to fifty non-Ph.D. projects.

The researchers have studied varied topics in this field—child rearing, child behaviour, learning, personality, motivation, adjustment, aggression, achievement, motivation, etc. The range of topics is so wide that it is difficult to comment on the trend of research studies. However, what is apparent is that, while previous studies were more concerned with correlational or survey techniques, studies in the later period have adopted more sophisticated research designs and equally sophisticated statistical techniques for data analysis and hypothesis testing. The selection of sample has also become more scientific. Panda the author of the trend report has classified the studies under the headings: Learner Characteristics, Correlates of Achievement, Cognitive Growth and Processes, Learning Process, Classroom Management, Mental Health and Adjustment, Ecology, Ethnicity and Behaviour Development, Tests and Measurement, Intervention Studies, and Cross-cultural Perspectives. It may be mentioned that, during the last decade, researchers have placed greater emphasis upon cognitive functioning of children in school learning. These studies include studies on information processing under verbal and non-verbal cues. Further, the structure of cognitive processing abilities in tribals and non-tribals was studied in 1984. Studies concerning cognitive style and language development among children in the age-group of 2-1/2 to 4 years are areas that have been under the close attention of researchers during the last few years. A new trend is a steady increase in intervention studies during the last 7–8 years. According to the author of the trend report included in this volume, 'educational psychologists have realized of late that in order to have any impact on the life of pupils and society at large, behaviour change programmes are imperative rather than studies'. The topics on which interventions have been designed, represent progress in thinking and innovative steps to make educational psychology practically viable. The research priorities, among other themes, include researches to understand the basic processes underlying learning and instruction; designing of instruction in terms of feasible strategies; and dimensions of instructional systems underlying varieties of learning outcomes. Other areas of priority are effective classroom climate and desirable teacher behaviour.

Creativity

Creativity is a late entrant into the realm of educational research in India. Earlier surveys did not carry any trend reports on creativity; however, writers of trend reports on tests and measurement did make references to studies in the area of creativity. The first research study in

the area of creativity was conducted by Manas Raychaudhuri in 1962. Gradually, research on creativity increased and today it occupies a prominent place in the research arena. Table 1.14 presents a review of Ph.D theses and projects on creativity. The studies included in the table are those for which research abstracts are available in the four surveys.

It is significant that, from a total of the 137 Ph.D. studies, 43 studies are from departments of psychology. A large number of studies (about 50 per cent) are concerned with the personality correlates of creativity. According to the author of the trend report on this subject the state of the art in creativity is indefinite and inconclusive. Researchers have not addressed themselves in a sustained manner to any major problem in this area. The author further says that the methodology of research applied to study creativity has been rather narrow. Creativity has to be studied along all dimensions—biological, cultural, anthropological and socio-psychological. A careful review of creativity research reveals a number of problems for researchers. They have constructed measuring instruments; and studied relationship between creativity, intelligence, achievement and a host of psychological variables. What is needed now is to devise programmes and methods which would promote creativity and divergent thinking. It has gone largely unnoticed so far that parents at home and teachers in schools have a role to play in fostering creativity. Unless research-based programmes and methods of teaching are tried, tested and used, the formal school system may not be in a position to develop and nurture creativity. It is evident that this area provides ample scope for really productive work for social scientists, specially educationists and psychologists.

Table 1.14

DECADE-WISE GROWTH OF RESEARCH IN CREATIVITY

Decade	*Doctoral Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	0	0	0	0
1961–70	0	1	1	2
1971–80	30	20	7	57
1981–88	52	22	4	78
Total	82	43	12	137

Guidance and Counselling

Guidance and counselling has been a priority (popular) area for study by educationists, psychologists and social workers. Apart from Ph.D. theses, there is considerable other research in this area. Two major phenomena are responsible for this thrust. As early as 1954, the Government of India had established the Central Bureau of Educational and Vocational Guidance, followed by the establishment of state bureaux. Secondly, the NCERT has been organizing a diploma course in guidance and counselling since its establishment. This has also motivated a number of social scientists to study problems in this area. The establishment of multipurpose schools during the fifties and vocationalization of secondary education at the +2 stage also provided a fillip to research in this area. The decade-wise growth of research in this area is given in Table 1.15.

Table 1.15

DECADE-WISE GROWTH OF RESEARCH IN GUIDANCE & COUNSELLING

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941-50	0	0	0	0
1951-60	3	0	2	5
1961-70	8	12	10	30
1971-80	22	13	16	51
1981-88	19	6	4	29
Total	52	31	32	115

When one considers Bengalee's review of research studies in this area in this volume and a similar review by Joshi and Gakhar in the *Third Survey of Research in Education* (1986), one finds that the major features have not changed significantly since 1983. All researches focus on secondary and higher secondary students. Areas under study include vocational development and maturity, vocational choices and vocational interests, and mental health of children. Guidance workers have studied the problems of exceptional children (treated in a separate chapter in this volume). They have used a variety of tests to measure intelligence, aptitude and personality. Some of the guidance bureaux have developed their own tests while others have been using tests devel-

oped by other agencies.

Research on guidance at the elementary-school stage is not significant. The child at the lower primary stage experiences problems of school adjustment. The need is to provide assistance to teachers to help children with problems of adjustment. Researchers have not contributed much for teachers and children at the elementary stage.

Areas that need special attention are strategies for developing sound reading habits, reading skills, reading interests, study habits. Though these are problems in the area of curriculum, guidance workers cannot absolve themselves of responsibility. Guidance for primary children needs greater attention, and should assume priority in the years to come.

Tests and Measurement

This area has attracted a large number of researchers from education and psychology. The University of Bombay, Gujarat University and the M. S. University have developed a large number of measuring instruments in the areas of intelligence, aptitude, personality, teacher behaviour, teaching effectiveness and so on.

The decade-wise growth of research in this area is presented in Table 1.16.

Table 1.16

DECADE-WISE GROWTH OF RESEARCH IN TESTS AND MEASUREMENT

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	6	7	8	21
1961–70	35	34	19	88
1971–80	24	27	23	74
1981–88	27	17	13	57
Total	92	85	63	240

It is seen that education and psychology have contributed more or less equally to research in this area. A large number of research projects (more than 25 per cent) indicates the amount of institutional/non-degree research in this field. The factors influencing research in this area are the early influence of psychologists and specially the psychometricians on educational research, research projects in this area by the CIE, Delhi, and the Government Central Pedagogical Institute (GCPI), Allahabad, and the thrust by the NCERT through its erstwhile department of psychological foundations. The first Ph.D. in education was awarded by Bombay University for a thesis with a strong psychometric bias.

Decade-wise distribution reveals the upward trend of research in this area during the fifties and the sixties, and a clear decline during the seventies and the eighties. In spite of the fact that a large number of tests in various areas are available, the world of education does not seem to use them adequately or properly. Some institutions use psychological tests, specially intelligence tests for admission purposes or for classification. Guidance workers use intelligence, aptitude and personality measures to provide counselling to secondary students. But when tests are used to make decisions about admission or placement of children, as in special education classes, three major research questions need to be studied: (i) What is the validity of the diagnosis and what contribution does the test make to the total diagnosis? (ii) What are the educational advantages of placing an identified child in a special class or programme? (iii) Does the knowledge of test scores create a bias about the child in future decisions? Apart from these questions, the basic issue is how the use of tests for classification influences our concern for equity and excellence. Indian researchers need to turn their attention to these basic questions.

Curriculum

Curriculum is at the heart of an educational system. One would naturally expect researchers in education to give a place of priority to this area. And, this has been so. Decade-wise growth indicates a steady increase of studies in the area. However, an overview shows that the contribution of disciplines like philosophy and sociology is not adequate.

Table 1.17

DECADE-WISE GROWTH OF RESEARCH IN CURRICULUM

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	1	1	0	2
1951–60	1	0	1	2
1961–70	5	1	7	13
1971–80	26	5	26	57
1981–88	35	13	17	65
Total	68	20	51	139

There are very few studies at Ph.D. level in disci-

plines other than education. It is necessary that departments of philosophy and sociology should also study curriculum as these disciplines have a direct bearing on this subject at all stages of education. Concerning the researches completed, it is seen that the scholars have investigated this field right from evaluating the objectives of curriculum to evaluation of learning outcomes and, further, evaluation of textbooks at all stages, viz., elementary to higher education, in languages, mathematics, sciences, social sciences, work experience, physical education, population education, and vocational education.

Apparently, a fairly appreciable research level has been attained. However, considering the vastness of the field and the variety of aspects involved, one cannot but conclude that much remains to be done. In fact the area of curriculum research is characterized by a plethora of studies with minimum impact. Of course, this can be said about researches in other areas too, but it applies more pointedly to curriculum research. The country is large, with education still predominently under the control of the states. This makes the task of a researcher in curriculum difficult. If one researcher evaluates the objectives of curriculum in science education, another has already evaluated mathematics curriculum at the elementary level. Curricula at different stages of education have been studied in a disjointed way. As a result, curricula are not influenced by research findings. There are no empirical studies, trying out a suggested curriculum and assessing its effects. Curriculum research needs a strong central organization to plan and monitor research and further to monitor implementation of research findings. Apart from these national-level efforts, individual researchers also have much to contribute in curriculum studies. They need to plan their studies in such a way that innovations in curriculum and their evaluation go together. There is a need to find answers to questions like, which approach, 'A' or 'B', is relevant to the teaching of a particular unit. Several variables are related to teaching a particular content, viz., teacher behaviour, students' abilities and ways and means to adapt teaching to learners' needs. All these need to be studied in a planned way. The findings of such studies need to be looked at from the perspective of the learning theories of Bruner, Ausubel, Gagne, Piaget and others so that a psychological basis can be provided for the curriculum and more particularly, psychological theories can be translated into pedagogical constructs. Apart from this, there is a need to match the curricula at different levels to national objectives and constitutional obligations. It is necessary that research and development programmes be taken up to link curricula to secularism, socialism and democracy.

Language Education

In India, more than 700 languages are used. Out of these, 58 are used in classrooms of educational institutions. English continues to be a dominant language and a preferred one among most of the educated elite. The problem has become more complex as the Three Languages Formula is not strictly followed anywhere. Language problems have attracted a number of researchers to the study of difficulties arising out of media of instruction other than the mother-tongue. The spurt in researches in this field during the last decade is bacause of language controversies drawing the attention of researchers and the increased activities of the language institutes in the country. Table 1.18 shows the decade-wise growth of research in language education.

Table 1.18

DECADE-WISE GROWTH OF RESEARCH IN LANGUAGE EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941-50	1	0	0	1
1951-60	6	0	3	9
1961-70	12	2	28	42
1971-80	58	8	42	108
1981-88	53	22	15	90
Total	130	32	88	250

Pattanayak who has reviewed this area has categorized studies in the field into three classes, viz., studies on language as a medium of instruction, bilingual education in India, and language disorders in the country. The area where a heavy concentration of researches is seen is concerned with studies on language as a medium of instruction. In this area, researchers have evaluated textbooks written in different languages. Some researchers have shown their preferences for themes related to empirical studies. Such studies deal with differences between abilities of students taught in the mother-tongue and other than mother-tongue. The results of these studies are conflicting and do not help in arriving at generalizations. Other researches in this area have studied language ability as a medium of communication. These studies investigated comprehensibility of

the language used in science, social-science and language textbooks. Such studies are welcome. There is a need to conduct more studies in this direction. Further, studies in methodology of teaching languages are also lacking. There is a need to establish the types of skills which are required for a particular language. After all, language is akin to the cultural setting in which it is generated, and it must require a particular type of skills for teaching. The major drawback pointed out by Pattanayak is that researchers have not viewed their findings from the linguistic point of view. In order to attain relevance, studies in language teaching need to examine psycho-social problems of language and find solutions. Pattanayak has further emphasized the need for associating a linguistic expert in language education studies. This would lead to better research in language education.

Social Science Education

Studies in social science education began when researchers attempted to find out the effects of particular methods of teaching on achievement of students in the social sciences discipline. Table 1.19 shows that most of the researches in this field were done after 1970. The reason for this could be that this was the time when various teacher education colleges sought research grants from various agencies to conduct research in methods of teaching in different school subjects. With this spurt in research in this field, it was thought appropriate to devote separate section to this area in this volume. Previous surveys included researches conducted in this area, but these were categorized in sections such as curriculum, methods, textbooks, educational evaluation and examinations.

Table 1.19

DECADE-WISE GROWTH OF RESEARCH IN SOCIAL SCIENCE EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	1	0	3	4
1961–70	1	0	1	2
1971–80	4	0	6	10
1981–88	14	0	6	20
Total	20	0	16	36

Researches conducted in this area include such subjects as history, geography, civics, social studies, population, commerce, home science and music. The maximum number of researches have been carried out in the area of geography. Vedanayagam, author of the trend report, has reviewed 36 studies and categorized them under teaching methodology and models of teaching, educational technology, curriculum, textbooks, test and measurement, examination and evaluation, interests and attitudes, and aptitude. More than 50 per cent of the studies have been conducted in the area of teaching methodology and educational technology. In the latter field researchers have prepared instructional material in different forms. The area that has been least explored is interest, attitude and aptitude. Though the number of researches in this field is increasing, it can be seen that the studies have concentrated on methods of teaching. There is a need to conduct researches in the area of evaluation and tests, and measurement. Development of diagnostic tests will facilitate recognition of difficulties related to the concept of social sciences. Vedanayagam has pointed out that social science education should depend more on qualitative than on quantitative techniques of research. The question that needs to be answered is how the teaching and curriculum of social sciences should be planned so that the learners develop Indian values and good citizenship for a secular, socialist society.

Mathematics Education

Mathematics education has been given a separate place in this Fourth Survey. Till the Third Survey, research studies in mathematics education formed a part of the studies in curriculum. Between the years 1983 and 1988, about eighteen studies in this area were recorded. The decade-wise growth of research in mathematics education is given in Table 1.20.

Table 1.20

DECADE-WISE GROWTH OF RESEARCH IN MATHEMATICS EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	1	0	0	1
1951–60	0	0	0	0
1961–70	2	0	5	7
1971–80	21	0	10	31
1981–88	28	0	1	29
Total	52	0	16	68

Research in mathematics education really picked up in the decade 1961-70. Since then, there has been a steady growth of about three studies every year. The major areas under which the studies are classified in the trend report are (i) teaching and teacher behaviour, (ii) curriculum and textbooks, (iii) factors affecting achievement, (iv) diagnostic and other tests in mathematics. Md. Miyan, the author of the trend report, has found that considerable research has gone into methods and strategies of teaching mathematics. The researchers have evaluated the effect of methods on a variety of variables like personality type, achievement, intelligence, level of thinking, sex and concept attainment.

Regarding research in mathematics curriculum, the author feels that there is no systematic evaluation of curriculum in general and textbooks in particular. Curricula in mathematics have been developed on the basis of experience rather than research evidence. Researchers in mathematics have shown considerable interest in constructing different types of tests in mathematics. The weaknesses of students in learning mathematics have been identified and remedial programmes have been developed. Mathematics educators have developed programmed material in mathematics in a significant way. The material developed by Shah (1969) has been widely used by researchers while that developed by Seshadri (1980) has been considerably used in secondary schools. Even though there are as many as 68 studies in mathematics education, much remains to be done.

An analysis of various board results by the NCERT has shown that a large number of students fail in mathematics. Researchers need to study this problem statewise and identify reasons. Some studies in this field have been done but they are sporadic and not systematic. Planned, sequential research is needed to provide a solution to this academic malaise. The major problems that need the attention of researchers are development of curriculum, based on research findings, more economic methods of teaching to combat the knowledge explosion, studies in the area of diagnostic testing, developing a major intervention programme to streamline mathematics education and designing more effective programmes for preparing teachers of mathematics.

Science Education

In earlier surveys, science education was covered under research in curriculum, teaching, evaluation, etc. Till 1970, there were only four studies in science education. Even up to the end of the *Second Survey of Research in Education*, there were only eight studies in science education. Between the first two surveys, only thirteen studies were located. During the period of the *Third Survey* with an intense screening of studies, 49 studies could be identified. In view of this increased research, research in science education is given an independent section in this Fourth Survey. The progress of research in science education is given in Table 1.21.

Research in science education picked up only in the decade 1971-80, when a number of projects were undertaken, and took a further jump in 1981-88 when a large number of Ph.D studies were completed.

Table 1.21

DECADE-WISE GROWTH OF RESEARCH IN SCIENCE EDUCATION

Decade	*Doctoral Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	1	0	0	1
1951–60	1	0	0	1
1961–70	1	0	1	2
1971–80	19	1	17	37
1981–88	52	1	7	60
Total	74	2	25	101

The major problem in science education is how to develop a scientific attitude. Mere knowledge and understanding of science are not adequate. According to Ganguli and Vashishtha, the authors of the trend report on research in science education, there is not even a single study on the nature of the concept of scientific attitude. There are a few studies on the scientific attitude but no study on its development.

A second set of problems is related to science teaching and developing creativity in the science. Regarding science teaching, there are a few surveys but no well-designed experimental studies. Creativity in science has been studied, but the need is to know the 'how' of developing creativity in science. Research in science education needs comprehensive planning and a holistic approach to obtain tangible findings for streamlining science education. For this, intervention studies need to be undertaken.

Educational Technology

Educational technology as a subject of study took root in India in 1965, when the NCERT started a nationwide

campaign of organizing training courses and seminars on programmed learning. The concept underlying programmed learning was the application of a systems approach for the improvement of instructional systems in terms of effectiveness and efficiency. The concept was later broadened to include everything that could be organized under the systems approach for achieving the desired goals through instruction. This is how audio-visual aids and modern communication technology began to be included under the scope of educational technology. During the process, many things got integrated with it, like mass-media, correspondence education, mastery learning strategy, models of teaching and computers. Naturally, with the inclusion of so many techniques, the area of research in educational technology also broadened. Research studies, which were only 15 in number up to 1970, scaled up to 62 by 1988. The other factor that contributed to the growth of research in this field has been the efforts of the NCERT and the Indian Association of Educational Technology in highlighting many research themes.

Table 1.22

DECADE-WISE GROWTH OF RESEARCH IN EDUCATIONAL TECHNOLOGY

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	0	0	0	0
1961–70	2	0	13	15
1971–80	35	2	11	48
1981–88	39	1	22	62
Total	76	3	46	125

The decade-wise distribution of research in educational technology (ET) shows a rapid increase from 1961-70 to 1981-88. The reasons for this lie in the fact that, during 1981-88, educational technology cells were set up in the SCERTs and the CIETs activities gathered momentum. During these years, the professional association of educational technologists accelerated its activities, arousing the interest of potential researchers.

As far as researches in the field are concerned, a definite trend can be observed. The previous researches of the late sixties were concerned with assessing the effectiveness of programmed learning material, where norm-referenced tests were used as a measure to study effectiveness. Now, in the late eighties, studies have changed their course towards establishing the effectiveness of mastery learning strategies, using principles of criterion-referenced tests in the broader perspective and more systematised manner. During this period, studies that used the mass media and the latest communication technology have been conducted. These studies were limited to testing the effectiveness of the use of the media in teaching different subjects. Research of this type does not have any serious contribution to make to improve instruction. Professor Shukla, author of the trend report, has pointed out that there is a need to test all programmes for their effect on the learners in different social milieux.

Correlates of Achievement

Academic achievement has been the criterion for judging the individual, right from the start of formal education. If the goal of education is enhancing the academic achievement of the individual, then researchers will have empirically to find answers to various questions related to achievement. It is in this endeavour that researches continue in this field despite the fact that people in education have begun to feel that the findings of such studies do not have direct practical relevance. The number of studies have increased from two in 1960, to about ninety up to 1988. Research in this area constitutes about five per cent of the total educational research up to 1988.

Table 1.23

DECADE-WISE GROWTH OF RESEARCH IN CORRELATES OF ACHIEVEMENT

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	2	0	0	2
1961–70	14	11	12	37
1971–80	55	27	13	95
1981–88	69	19	5	93
Total	140	57	30	227

The variables studied in this area as correlates of achievement are large in number. Padma has, in her review, classified the variables studied into four sections, viz., student variables, teaching variables, sociological variables, and other variables. The context in which these variables have been studied by researchers does show a definite trend. Previously, scholastic achievement in different subjects had been the main dependent variable. But, of late, researchers have shifted their attention to proficiency in the entrance examination or professional examination. Some researchers have been studying group-specific correlates of achievement, mainly taking disadvantaged groups as their sample. Some of researchers have chalked out remedial measures for increasing achievement and have conducted experimental studies to draw conclusions. These studies represent a welcome trend at least at a time when it has been established that the abilities of an individual are not static, and can be enhanced. But all these studies centre on the use of quantitative data. That is why, even after probing this field for the last three decades, it is difficult to make generalizations, and answer the question, 'How does one enhance achievement of an individual?' What is desired is that studies are planned in such a way that findings are explained with philosophic and social insight. After all, the job of the scientist is not simply to state the relationship; his job is to explain the 'why' of the phenomenon.

Finally, as the author of the trend report states, the existing studies focus on correlates of achievement at the school level. There is need for more research at other levels of education also. Maybe this would require the development of tools suitable for use at those levels; yet, the effort would be worthwhile.

There is further need to plan intervention studies to improve school performance if some of the correlates of achievement lend themselves to easy manipulation. No effort seems to have been made in this direction.

Evaluation and Examinations

The importance of evaluation and examinations as deciding factors of curriculum, teaching and academic function has been recognized by all who have been associated with education. That is why, individual researchers as well as institutions have long been exploring this field. As many as 207 studies were completed up to 1988, out of which more than 50 per cent were projects undertaken at institutional level. The maximum contribution has been from the UGC, NCERT and AIU. At the individual level, most of the studies have been undertaken in university departments of education in pursuit of doctoral studies. Table 1.24 shows a different kind of trend. It was in the sixties that the area caught the attention of researchers, but after that there has been a continuous decline in the number of studies in this field.

Table 1.24

DECADE-WISE GROWTH OF RESEARCH IN EDUCATIONAL EVALUATION AND EXAMINATIONS

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	1	0	0	1
1951–60	5	2	13	20
1961–70	18	6	64	88
1971–80	30	3	29	71
1981–88	18	3	6	27
Total	81	14	112	207

A scrutiny of studies undertaken in this field so far does not yield any apparent trend. Singh and Prakash, authors of the trend report in this volume, have categorized researches in this field in six areas, viz., achievement tests, diagnostic tests, examinations, factors affecting achievement, prediction-admission-promotion, and failure. In the area of achievement tests and diagnostic tests, the researchers have developed them in different subjects, but they have not paid sufficient attention to developing criterion-referenced tests and tests for mastery-learning strategies. In the case of examinations, researchers are concerned with achievement, examiner reliability, question papers, question banks, pass percentage, internal-external assessment, theory and practical examinations, etc. A glance at all these studies reveals that researchers have been making a piecemeal approach to the study examinations. This area needs to be studied in a holistic manner, and preferably in the context of management. The various stages of examination organisation include selection of paper setters and moderators and their training up to the stage of conduct of examinations. Studies in this area are likely to yield socially acceptable recommendations. The area of failure has also to be studied from a mastery-learning point of view, rather than simply making triv-

ial studies relating extrinsic or intrinsic factors related to students. Finally, it may be said that whatever examination reforms may by suggested by the researchers, in a democratic society like ours, researches have a long way to go. With the solution of each long-standing problem, new ones will invariably crop up and researchers have to keep an eye open for these and provide empirical solutions for them.

Teacher Education

The mass literacy goals and emergence of technology in education has made teacher education an integral part of the educational system. Its being a felt need has led university departments of education to pay more attention to it. No wonder then that it has attracted the special attention of a large number of researchers. From the meagre four studies up to 1960, the number has gone up to 370 in 1988. This is because of the special efforts of the teacher-education departments of the NCERT, SCERTs and state boards of teacher education established in various states. Other bodies that have shown special interest in research in teacher education are the UGC and ICSSR which have provided grants to various universities and education colleges to steer programmes of research in teacher education. The research in this area is expected to get a further impetus because of the stress laid in National Policy on Education (1986) on education of teachers, right from the elementary level to higher education level.

Table 1.25

DECADE-WISE GROWTH OF RESEARCH IN TEACHER EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	0	1	3	4
1961–70	19	2	20	41
1971–80	90	11	55	156
1981–88	112	7	50	169
Total	221	21	128	370

Researchers in the field have used different sets of variables to study teacher education. One set is concerned with a study of characteristics of teachers, student-teachers, institutions, etc.; a second set is linked with characteristics of teacher-educators; a third is related to training procedures, and a fourth to attitudinal and other changes in student-teachers or teachers. Singh and Malhotra, authors of the trend report, have named studies of these sets of variables as context, presage, process, and product studies respectively. They have however been studied in isolation, without any relation to each other. Because of uncoordinated and unplanned efforts of researchers and agencies connected with research in teacher education, the studies do not give a comprehensive picture of the status of teacher education. The researchers have studied the curriculum of teacher education programmes of different institutions, but they have not been able to solve the controversy about the major components of theory courses and the proportion of weightage that needs to be given to theory and practice in teaching. Again, the researchers are unable to put forward a curriculum of teacher education that will cater to the needs of the consumers of teacher-education programmes. Studies carried out in the field of practice teaching have a similar record of shortcomings. Micro-teaching as a technique of skill-development has established itself; yet scholars are still engaged in repetitive exercises to measure the effectiveness of micro-teaching. Further, in the case of evaluation in teacher education, studies are rare. They have not been able to establish an evaluation procedure that will make a distinction between competent and non-competent teachers. There is need for a planned effort on the part of researchers in particular and agencies of teacher education in general to solve these problems. They need to look at teacher-education programmes from the point of view of national objectives and the demands of the society so as to evolve a desired and effective teacher-education system. Further, there is need to see that teacher education is planned and organized on the basis of research findings about the issues raised in the National Policy on Education. These issues are mainly concerned with teacher accountability, academic staff colleges, and professionalism among teachers, and are related to the efficient working of the system.

Teaching

Studies in teaching began in India as early as 1952, when Professor S.B. Adaval completed his study on

qualities of teachers under training. This was the beginning of research in teaching and the allied areas of teacher education. After a lapse of about twenty years, the Centre of Advanced Study in Education of the M.S.University of Baroda, started planned, sequential research in teaching, beginning from 1969 and continuing through to 1977. A large number of studies on teacher behaviour, patterns of classroom teacher-behaviour and educational attainment, and changing the classroom-behaviour of teachers were planned and completed. These studies are by Jangira (1972), Pangotra (1972), Quaraishi (1972), Santhanam (1972), Sharma (Mukhopadhyay) (1972), Lulla (1974), Padma (1976), Roy (1977), Shaida (1976), Patel (1974), Chakravarti (1978) and others. These studies got an all-India platform when the NCERT took up national-level studies on teaching skills to be developed through micro-teaching technique without the use of hardware. Discussions on teaching and skills of teaching led researchers, under the leadership of the Indore School of Education, to plan and initiate work on Models of Teaching. In this way there has been continuous advancement of research in teaching/models of teaching. A large number of studies on models of teaching are currently being conducted. The growth in studies in this area over a period of five decades is shown in Table 1.26.

Table 1.26

DECADE-WISE GROWTH OF RESEARCH IN TEACHING

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	1	1	1	3
1961–70	4	2	3	9
1971–80	48	1	9	58
1981–88	30	3	5	38
Total	83	7	18	108

Reviewing the studies, it seems that the topics studied are concerned with teacher's personality and other organismic variables, teaching skills and competencies of teachers and change in cognitive, psychomotor and effective skills of the learners. The earlier studies in teaching and teaching skills attracted the interest of later researchers to the area and, subsequently, the pioneers as well as a new batch of young researchers have been working on integration of skills, teaching models and mastery-learning strategies. The few research studies on teaching models which have been completed or which are in progress, indicate that researchers have used training techniques for developing subject-specific abilities among teachers. This trend from classroom interaction to skill training and onwards to developing specific abilities is a welcome one. There is, however, some apprehension among a group of social scientists that, through this process, teaching may become a mechanized phenomenon rather than a human endeavour. There is a need for researchers to consider this possible outcome not only from the point of view of technical efficiency in imparting knowledge on training, but also from the humanistic angle, in terms of personality development and human relationships. It is research on this issue that will answer the question, 'What is good teaching?' Researchers should plan their studies using different models of teaching and then explain them with their underlying philosophic principles rather than simply in terms of cause and effect relationships. A concerted effort in this direction will help in building a theory of teaching.

Educational Management

Mukhopadhyay and others have reviewed all studies in the area of educational management completed during the last five decades. They have classified the studies in two clusters. The first has three areas, viz., History and Status, Planning, and Special Groups and Special Problems. The second cluster has fourteen areas, viz., Goals of Management, Decentralization, Participation, Professionalization, Autonomy, Accountability, Structures, Behaviour Aspects, Resources, Practices, Legal Support, Personnel, Change, Monitoring and Evaluation. The authors report that there has been a steady increase in the number of studies in this area during the last five decades. Table 1.27 indicates this growth.

Most of the studies are in the departments of education, either as Ph.D. theses or as projects. Very few studies are found in other departments. The majority of studies have adopted a survey approach and only a few an indepth case-study approach.

The authors of the trend report feel that there are no studies in the areas of goals of management, decentralization, professionallization and accountability. Some significant studies are found in the area of special

Table 1.27

DECADE-WISE GROWTH OF RESEARCH IN EDUCATIONAL MANAGEMENT

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	4	0	4	8
1961–70	15	1	18	34
1971–80	90	16	67	173
1981–88	87	8	39	134
Total	196	25	128	349

groups and special problems. Here the studies focus on the special groups, viz., scheduled castes, scheduled tribes and women. In this area, studies have been carried out by individual researchers as well as by national-level organizations like the NIEPA. The special problems studied are those of wastage and stagnation and drop-outs at different levels. Out of the nine studies analysed, four deal with the problem of wastage in school education in Assam, four studies examine the problem of wastage in the schools of Bihar, Rajasthan and Uttar Pradesh and one study attempts to examine the incidence of drop-out and maladjustment among students in relation to creativity and the social structure of the school. The NIEPA has conducted a study on the autonomous colleges of Tamil Nadu which concluded that they had been, to a large extent, successful in implementing the innovation.

The trend report indicates major trends in six different areas. A very large number of researchers opted for studies on behavioural aspects of management, history, or the existing status of the administrative system. School education has received the single largest attention of scholars. Research in educational management is not evenly distributed among various states and Union territories. Almost all researches in this area have adopted the cross-sectional survey approach. Most of the findings correspond with those previous similar studies in the country.

Non-formal Education

Although the terminology 'non-formal education' is new, educational programmes that belong to this category have been in operation in the country for a long time. These include programmes of social education, adult education, continuing education, extension education, farmers functional literacy programmes and others. In the Fourth Survey of Research in Education, adult education and adult literacy is allotted a separate section. All other programmes are retained under non-formal education (NFE). Dr. Govinda the author of the trend report in this volume has classified the studies under different sub-headings such as Non-formal Elementary Education, Social Education, Need Survey of NFE, NFE, and System Approach, NFE for Farmers, NFE for Rural Women and Impact of NFE Programmes. The largest number of studies are in NFE at the elementary stage. Even though the number of overall studies in NFE is small, it would be interesting to see the decade-wise growth of research in this area.

Table 1.28

DECADE-WISE GROWTH OF RESEARCH IN NON-FORMAL EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	0	0	1	1
1961–70	3	3	4	10
1971–80	11	2	6	19
1981–88	10	0	9	19
Total	24	5	20	49

Reviewing the studies in non-formal education in the country till 1983, Palsane and Rastogi (1983) were optimists when they stated that this area was attracting the attention and interest of researchers. However, the relatively small number of studies during 1983-88 reflect a low degree of enthusiasm among researchers. Govinda while reviewing research in the field cites at length the NCERT's programme of non-formal education at Bhumaidar and the non-formal education programme of Madhya Pradesh. Two other major projects are also mentioned, viz., the Comprehensive Access to Primary Education and universal elementary education of the Indian Institute of Education, Pune.

There are projects on curriculum, expectations of learners, instructional material, and so on. There are a number of evaluative studies—two in Rajasthan, one in Madhya Pradesh and three in Andhra Pradesh.

Non-formal education for women was the theme of study by three researchers while two researchers have studied the impact of NFE programmes on the community.

In his observations, Govinda emphasises the need for encouraging more scholars to take up research and investigations in this area. Regarding the qualitative aspects of research, the author of the trend report finds lack of conceptual clarity among researchers a major factor affecting the quality of the research in this area. Finally, the author says that three important considerations should be borne in mind by researchers in non-formal education, viz., the need to take a holistic perspective of the field; to design studies with a programmatic framework; and to make the research relevant to practice and policy making.

Adult Education

Adult education includes adult literacy and continuous upgradation of skill with a view to equipping adults to join the mainstream in the national development process. Adult education in terms of its target group orientations accords priority to those in the 15–35 age-group. Though the volume of research is growing, no clear pattern emerges from the studies. The period 1981–88 has seen a number of studies on management and evaluation of programme of adult education because of the central government's sponsorship of these programmes and the tempo generated as a result of the National Adult Education Programme launched in the late seventies. Table 1.29 gives a decade-wise distribution of studies in the area.

Table 1.29

DECADE-WISE GROWTH OF RESEARCH IN ADULT EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	1	1
1951–60	1	0	3	4
1961–70	2	0	7	9
1971–80	6	1	9	16
1981–88	21	4	53	78
Total	30	5	73	108

A large number of projects financed by the Government of India had taken up responsibility for monitoring and evaluating the programme. Bhatia, the author of the trend report, has categorized the studies as belonging to (i) history and development, (ii) development orientation and linkages, (iii) community participation, (iv) instructional strategies, (v) literacy and post-literacy materials, (vi) learner motivation and attitudes, and (vii) programme management and programme evaluation.

The first research study in adult education was completed by Gadgil in 1945. During the next fifteen years only two additional studies were completed. It is only from the decade 1961-70 that research in adult education picked up momentum. The launching of the NAEP scheme and establishment of departments of continuing adult education and extension in universities accelerated the pace of research in the area. The university departments of adult education have also started research studies at Ph.D. level. Bhatia, while reviewing the studies in the area, has observed that 'with the growing body of research, there is need to pay attention to the capabilities and skills of researchers'. He has indicated the need for training staff of adult education departments in research skills in order to upgrade the standard of their research. Such a training should be general as well as problem-specific. All aspects of adult education are important but the methodologies in adult education and development and trying out of reading material need be given special priority.

Early Childhood Education

Early childhood education has been a subject of intense discussion during the last two decades, specially since the National Policy on the Child was adopted by the government. The launching of the Integrated Child Development Scheme (ICDS) in 1975 gave a further boost to the early childhood education movement. The National Institute of Public Cooperation and Child Development (NIPCCD) initiated studies to monitor and evaluate the components of the ICDS. Besides this, the child-study unit of the NCERT and the Indian Association of Pre-school Education provided strong support to researchers in the field. There has also been some contribution by the departments of psychology, more by the departments of education, but the major burden of leadership in the area has been shouldered by departments of child development in the universities. Decade-wise growth shows that up to the decade 1971-80, there was an increase in the number of studies in the area, but there has been a slump during 1981-88. In early-

childhood education, project research has been more extensive than Ph.D. research.

Table 1.30

DECADE-WISE GROWTH OF RESEARCH IN EARLY CHILDHOOD EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	2	0	0	2
1961–70	1	3	4	8
1971–80	3	7	25	35
1981–88	8	2	8	18
Total	14	12	37	63

Considering the amount of research in early-childhood education, a separate section has been assigned to this area in the current volume. The National Policy on Education (1986) has laid special stress on this and, as a result, studies in this area are likely to increase in the years to come.

Verma and Mohite have reviewed all studies and divided the studies into seven areas, viz., history, parent and community involvement, personality and trait development, assessment of pre-school education, training of personnel, intervention studies, and handicapped pre-school children. Four aspects of early-childhood education have attracted the researchers, viz., history, need and status, developmental aspects and personality traits, and impact of programmes. The last two aspects are important and should engage the attention of scholars. The quality of research has to be improved. Early-childhood education research suffers from ad hocism, and is fragmentary and non-sequential. It is very necessary that planned, continuous and sequential studies are taken up to elucidate important issues like the intrinsic and complex processes of child development strategies and approaches to early-childhood education, the appropriate curriculum mode, etc. We have two programmes concerning the child—the ICDS with emphasis on the child's welfare, and the early-childhood education programme. These have to be coordinated. This is a challenge for child psychologists, early-childhood educators and leaders of welfare movements. Only research in the area can guide the implementors of these programmes in an articulated manner, so as to get the maximum benefit from them.

Elementary Education

This is a new area appearing for the first time in this *Fourth Survey of Research in Education*. In the earlier surveys, studies in elementary education were distributed among curriculum, management of education, evaluation and examinations, and teacher education categories. There are 128 studies in elementary education. But if studies from other areas having relevance to elementary education are also considered, there are more than 200 in the area. Grewal and Gupta, the authors of the trend report, have classified the researchers in elementary education under ten categories, viz., history, development, universalization, pupil achievement, curriculum, evaluation, school systems, teachers and teacher training, economics and research needs. The major categories are, of course, universalization, curriculum, pupil achievement, and development of elementary education. About 80 per cent of studies fall under these categories.

The decade-wise growth of studies in elementary education is given in Table 1.31.

Table 1.31

DECADE-WISE GROWTH OF RESEARCH IN ELEMENTARY EDUCATION

Decade	*Doctoral Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	2	0	6	8
1961–70	6	1	10	17
1971–80	10	3	40	53
1981–88	14	2	34	50
Total	32	6	90	128

It is seen from the table, that research in elementary education picked up only after 1960. The last eighteen years, 1971-88, have seen more than 103 studies in this area. It is further seen from the table that during the first three decades only eight doctoral-level studies were undertaken in the education departments. The picture that emerges is that universities have not paid much attention to the study of elementary education.

Out of 128 studies, there are as many as 90 research projects. The NCERT, NIEPA, SCERTs and some research institutes have contributed about 70 per cent of research studies in the form of projects. The university departments of psychology, sociology and other social sciences have also neglected this important area of studies.

There is one Indian university which has taken up elementary education as the one and the only area of study at the post-graduate level. The papers in elementary education are compulsory for all M.Ed. students. Nevertheless, in the absence of an insight into the area and a programmatic framework of research in elementary education, nothing of significance has come out from the available research studies completed in the department.

The most important problems in elementary education are to attain universal enrolment, universal attendence, universal retention and improving the quality of elementary education. These aspects have received the attention of only a few agencies in India. The education department of the Bombay Municipal Corporation had initiated studies round these problems as early as 1955. The problem of universalization of elementary education received the continued attention of the NIEPA when it studied the administrative and academic measures necessary for universalization of elementary education in nine educationally backward states. Two major projects by the NCERT, viz Comprehensive Access to Primary Education and Primary Education Curriculum Renewal and a project by the IIE on universalization of elementary education are well planned efforts in the area of universal elementary education. In spite of these efforts, many problems in elementary education remain unsolved. A fresh look at research efforts in this area is needed. The NCERT and NIEPA should examine this problem with greater concern and plan research-based actions.

Vocational and Technical Education

On account of the greater stress on vocational and technical education within school education, a separate section is allotted to it in this volume. Researchers in this area during the period 1981 to 1988 number only 25 but during the earlier decades, 20 studies belonging to this area were identified and were included in different chapters like curriculum, evaluation, etc. Seetharamu and Rao have reviewed studies in the area and classified them under philosophy, history, sociology, comparative education, psychology management, curriculum, school organization, non-formal education and evaluation. The decade-wise distribution of studies in this area is presented in Table 1.32.

Table 1.32

DECADE-WISE GROWTH OF RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	0	0	0	0
1961–70	0	0	4	4
1971–80	5	7	4	16
1981–88	5	1	19	25
Total	10	8	27	45

Most of the studies in this area have been conducted only during the last two decades. A large number of them are in the areas of evaluation and educational psychology. The authors of the trend report have pointed out three types of shortcomings in research in vocational and technical education in India. The first is its gross inadequacy in quantity. Further, the research in this area has been quite slow and unsteady. Only in 1977, after the decision was taken at the national level to introduce vocationalization at the higher secondary stage, did research activity on the subject gather momentum. The second shortcoming identified is the imbalance in the coverage of areas. Nearly two-third of the studies fall under educational psychology or evaluation. Not a single study that is philosophical, analytical or critical has been reported. Further the studies are confined to only a few regions. The third shortcoming pointed out is the lack of theoretical perspective among researchers. A theoretical framework is needed for the development of human resources. Yet, there is no evidence of such a framework. The authors have also said that the quality of completed research in vocational and technical education needs to be stepped up significantly. It needs an interdisciplinary approach and multidisciplinary teams to plan and steer it.

Special Education

In the pre-independence period, very little was done

for providing educational facilities to handicapped children. The Indian Education Commission, 1964-66, recommended that 15 per cent of the physically handicapped should be provided education by 1986. The National Policy on Education (NPE), 1986, has stipulated that, wherever possible, education of children with locomotor or other mild handicaps should be integrated with that of other children; children with severe handicaps should be enrolled in special schools. In spite of attention given to this problem, there has not been substantial research in special education. Table 1.33 gives a bird's eye view of research in this area during the last five decades.

Table 1.33

DECADE-WISE GROWTH OF RESEARCH IN SPECIAL EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	0	0	0	0
1961–70	4	0	8	12
1971–80	3	12	2	17
1981–88	9	3	11	23
Total	16	15	21	52

It is seen from the table that only twelve studies have been completed in this decade. Out of these, most concern education of the visually impaired. The reason for this, as brought to our knowledge by field workers, is the easy availability of samples for these studies. The researchers did not take up studies because of their intrinsic importance.

The first research study in the field was conducted as early as 1965 by Advani in the Bombay University. The researches that followed are only status surveys. These are no doubt important to build the data base but their further utility is limited. What is needed is a series of experimental studies to provide answers to a number of problems in the area of curriculum, evaluation, production of materials, teaching methods, preparation of teachers, integrated approach in schooling, etc. The handicapped have to be educated to make them feel part of the society and the gifted have to be nurtured for guiding the future of the nation. The most important trend in the education of the special groups of children is attempts to integrate the handicapped, wherever possible, into schools for normal children, except in cases where the handicap is of a severe nature. It is expected that the establishment of units on special education in the NCERT will provide an impetus to studies in this area in coming years.

Higher Education

The *Second Survey of Research in Education* contained a chapter on research in higher education. The authors of the trend report had pointed to some of the noticeable features in higher education in India, steered and guided as it is by the apex organization, the University Grants Commission (UGC). One of the important functions of the UGC is to set up and maintain academic standards in institutions of higher education. The UGC tries to achieve this by giving financial aid to universities and exercising a sort of participative control on the functioning of the universities. There is no central organization specially devoted to research in higher education. In addition to the UGC, there are bodies like the Indian Council of Social Science Research, Indian Council of Philosophical Research, the Council of Scientific and Industrial Research (CSIR) etc., which support research programmes, in the departments of humanities, social sciences and natural sciences, in universities and institutes of higher learning. It should be accepted that even though research in various disciplines has increased, research in higher education, the pedagogy of higher education, has not taken substantial root in Indian universities. Table 1.34 shows the decade-wise growth of research in higher education in India.

Table 1.34

DECADE-WISE GROWTH OF RESEARCH IN HIGHER EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	0	0	0	0
1951–60	1	0	4	5
1961–70	3	10	13	26
1971–80	30	24	52	106
1981–88	39	23	25	87
Total	73	57	94	224

Table 1.34 traces the status of research in higher education in India. Most of these studies have been undertaken as part of doctoral studies in the departments of education. Only a few have been undertaken as projects by departments of education and other disciplines, and a couple by institutes of management. Anand and Piloo Buch, authors of the trend report have classified the studies under six categories, namely, history, sociology, economics, personnel, curriculum, and management and administration. It is seen that many researchers have studied the problems of students of higher education, their achievement, their adjustment, their aspirations, the unrest among the youth and student activism. There are a few studies on teachers in higher education. The administration of universities and colleges has recently been included among these studies. The authors of the trend report have characterized research in higher education as being still in its infancy, conceptually weak and methodologically unsound. The small number of researches make it difficult to make generalizations about higher education. The research gaps are wide and the priorities many. The writers of the trend report have recommended a Centre of Research and Training in Higher Education to support and monitor research in the discipline in Indian universities.

Women's Education

The topic of women's education did not appear as a special area in earlier surveys. It was a part of the coverage in other areas, viz., history, sociology administration and guidance and counselling. With the increasing stress on equality in education, it was thought necessary to assign a special chapter to women's education. Of course, the number of studies completed during the period 1983–88 is small, but if the last three decades are considered the volume of research is substantial enough to study the trend.

The last two decades have seen a spurt in research on women's education, both at the Ph.D. level and project level. The university departments of other disciplines have also contributed 27 of the total studies. The projects constitute about 28 per cent of the total research. According to Desai, the survey has very clearly shown that women's education not only deserves special attention but also that there are a number of dimensions which require indepth examination. Some of these are the philosophical perspectives on women's education, curriculum, textbooks, problems faced by women undertaking education, access to education for scheduled

Table 1.35

DECADE-WISE GROWTH OF RESEARCH IN WOMEN'S EDUCATION

Decade	*Ph.D. Theses in*		*Research Projects*	*Total*
	Education	*Other Subjects*		
1941–50	1	0	0	1
1951–60	1	3	0	4
1961–70	3	3	5	11
1971–80	15	4	4	23
1981–88	7	2	8	17
Total	27	12	17	56

class girls, adjustment of girls in co-educational schools and many others. There are, no doubt, some studies in very important areas like education of rural women, development of education among tribal women, occupational aspirations and vocational interests of girls in secondary schools and colleges. However, these are few, done on small samples and, what is more, they are methodologically weak. In the overall context of equality of education, women have to be provided education suitable to their requirements. There are some questions which existing researches have raised, such as whether to have or not to have a specialized curriculum for girls, what measures to take for orienting women to benefit from non-formal education, and in what way gender-bias can be removed from educational literature. These questions need planned research.

Education of the Disadvantaged

This chapter is new to the series of Surveys of Research in Education. In earlier survey volumes studies on the disadvantaged were included under Sociology of Education. The 'disadvantaged' is an omnibus category. It includes the scheduled castes, scheduled tribes, slum-dwellers and neglected minority groups, as also the economically backward individuals. There are a large number of studies in this area. In the early seventies, the ICSSR had sponsored studies on all-India basis to study the educational problems of the scheduled castes and scheduled tribes. This resulted in more than 35 studies. This explains the rapid growth of research in this area during the last twenty years. The decade-wise growth is presented in Table 1.36.

Table 1.36

DECADE-WISE GROWTH OF RESEARCH IN THE EDUCATION OF THE DISADVANTAGED

Decade	Ph.D. Theses in		Research Projects	Total
	Education	Other Subjects		
1941–50	1	0	0	1
1951–60	1	3	0	4
1961–70	3	3	5	11
1971–80	15	4	4	23
1981–88	7	2	8	17
Total	27	12	17	56

As a result of the initiative of ICSSR, the number projects in this area is larger than that of Ph.D. research studies, both those in education and in other departments of universities. Only during the last five years as many as 54 studies were completed. While most of the studies concerning scheduled castes and scheduled tribes were centrally sponsored and financed, individual researchers studied the educational problems of the religious minorities, city slum-dwellers and economically backward women in urban areas. During the last ten years, four studies were completed on the education of the Muslim minority. Two of them were from UP and one each from MP and Kerala. Two studies on slum-dwellers were completed during the late seventies. One was located in Bombay and the second in Delhi. Sachchidanand, while reviewing the research in this area, has made a number of suggestions for research workers: there should be more studies of the educational problems of the minorities in different states; the functioning of minority educational institutions should be studied; and, along with these studies, the interaction of minorities with the majority in general schools should be studied.

There have been only two studies on slum-dwellers so far. Equality of educational opportunities is denied to this urban group. To attain national cohesion it is necessary that education of slum-dwellers is studied and a programme is drawn up to solve their problems. Their educational problems are identical to those of the rural poor. The Government of India has already begun the programme of establishing Navodaya Vidyalayas for talented students of the rural area. If research scholars study the problems of urban slums, it may be possible to plan a similar programme for them. To what extent non-formal education can be useful to urban slum children is a question requiring study in depth.

Research at the M.Phil. Level

The M.Phil. programme is one of the late entrants into the higher education system in India. It gained momentum when the UGC made an M.Phil. degree an essential qualification for appointment as lecturer in colleges and universities. Between 1976–80, many Indian universities started M.Phil. programmes in education. Most of them have dissertation work as an essential requirement. About 857 dissertations have been reported in this survey. The standard and level of research work is marked by mediocrity and poor quality, according to Lokesh Koul, the author of the trend report. In a majority of cases, it is not different from the level of dissertations completed for the M.A. (Education) or M.Ed. level. It is necessary to look afresh at this programme as there is quite a bit of overlap between the M.Phil., M.A. (Education) and M.Ed. programmes.

EDUCATIONAL RESEARCH IN RETROSPECT

In the preceding pages, the quantitative growth of educational research during the last five decades has been traced. The growth has been phenomenal in practically all areas of education. Area-wise growth further indicates the growing interest of researchers in probing certain thrust areas. It also indicates the neglect of some crucial areas. One trend, however, cannot escape the attention of a discerning reader: the explosive increase in research in education, howsoever impotent and sterile it may be in its impact.

The reasons for ineffectiveness are, of course, many. As indicated earlier, the increase is due to the increasing number of degree-giving institutions, more facilities for undertaking educational research, a dilution of criteria for being recognised as Ph.D. supervisors and a rush of teachers of higher education to get a Ph.D. degree to update their qualifications and get higher scales of salary. Only some academicians have shown an added concern to upgrade the profession as such and that too has contributed to rapid growth of educational research.

If we look at the mass production of Ph.D. degree-holders in education from education departments during the last five decades, the following trends emerge:

In the forties, the country produced one Ph.D. in edu-

cation per year.
In the fifties on an average of one Ph.D. in education was turned out every 73 days.
In the sixties, a Ph.D. in education was, on the average, produced every sixteenth day.
In the seventies, a Ph.D. in education came to the surface every four and a half days on an average.
In the current decade, the eighties, every third day, on an average, a Ph.D. in education rolls out of the assembly line of an Indian university.

If the research output from other social science departments on educational problems is added, as also the additional non-degree educational research, the net outcome is an average of one research report on an educational issue at the end of every THIRTY-SIX HOURS! The last decade of the twentieth century will see a new research report on an educational problem every day.

The quantitative output has affected the quality of research. With the growth of educational technology, modes of preparing research tools, advances in data collection and electronic data processing devices, it was hoped that research quality would improve, but the benefits derived from these developments have been thwarted by lack of the rigour, seriousness and hard thinking so needed for quality research. The negative relationship between quality and quantity, the direct relationship between quantitative growth and qualitative deterioration is nowhere more pronounced in the field of educational research as in India.

SHORTCOMINGS OF EDUCATIONAL RESEARCH

Some major shortcomings in educational research which need attention are:

1. Absence of clear educational perspective.
2. Absence of a conceptual framework as the basis of educational research.
3. Inadequate understanding of the research process.
4. Inability of research to influence educational policy, programme or practice.

These major shortcomings have been discussed in many national forums. In the earlier three surveys Buch & Yadav (1974), Yadav et al (1979), Buch and Govinda (1986) have pointed out the various lacunae in educational research and discussed the issues at length. Rather than rediscussing this aspect of educational research, it would be best to summarize what has already been suggested.

Educational Perspective

Educational workers have failed to look at educational research in the broad perspective needed to make research more relevant and useful. The University Education Commission Report (1951) and the Education Commission Report (1964-68) stressed the linkage of the national education system to problems of national development. National development is based on the formulation of developmental goals. Developmental goals represent the changes to be brought about in various aspects of individual and social life. These developmental goals have to be formulated and concretized on the basis of individual and social needs. Education is the instrument to achieve this. This is a development-related educational perspective. Again, without any controversy, it is accepted that education is a subsystem of the larger societal system. The identification of the place of education in this larger societal system in relation to other component systems would be another perspective on which education and educational research have to be based. It is only then that educational research would be socially relevant in relation to developmental and social goals.

The major research project planned by ICSSR on studying the educational problems of the scheduled castes and scheduled tribes is in tune with these developmental/societal educational perspectives. The study of the administration of elementary education in the context of universalization is a major study by NIEPA from the needed educational perspective. The Developmental Norms Project and the CAPE projects of the NCERT are yet other examples of research programmes which have adopted a national educational/developmental perspective. This is also true of the action research project on universalization of primary education of the Indian Institute of Education, Pune.

As against these non-degree researches, the majority of the Ph.D. researches lack in this educational perspective which makes them socially irrelevant. As a consequence, the outcomes of researches without this educational perspective fail to throw adequate light on the educational process and thus fail to contribute to new knowledge in the field of education, either in theory or in practice. A critical review of more than 4700 Ph.D. and project research studies indicates that except for two or three clusters, most of researches fail to reflect any educational perspective. This explains why educational research in India has so far been neutral, with regard to policy, programmes and practice in education.

Conceptual Framework

The second lacuna is the need for a conceptual framework for conducting educational research. The importance of such a framework is accepted by educational researchers, but a perusal of researches reveals that they have never built their studies on a sound theoretical framework. The selection of the problem has, in most cases, been ad hoc and arbitrary, for which senior researchers in Indian universities must take the main responsibility, since it is their duty to guide the young researchers attached to them.

In the course of compiling abstracts for the present survey, names of research supervisors along with their designations were collected. It was demoralizing to see that one university professor who had started with a study the educational philosophy of Gita, later switched over to comparative education, then accepted students working in educational sociology, guided a batch of students in educational psychology, went over to guide studies in tribal education, teacher behaviour, vocational education and what not. Unfortunately, there are several examples of this type of research supervision. The research problems do not emanate from a sound conceptual framework and, consequently, researches do not help the process of theory building or knowledge integration. Degrees are earned. Degree earners get improved grades and become more prosperous, but education remains poor and, in fact, becomes poorer.

These are the two basic shortcomings in research in education. Allied to the problem of absence of conceptual framework is the neglect of planning sequential programmatic research. Selection of studies on an ad hoc basis, without planning a research programme within a sound conceptual framework, results in ineffective and dysfunctional research. In the seventies CASE did make an effort to undertake programmatic research in the areas of teaching and the educational change process. After five years, the programme was given up as a result of the transfer or superannuation of the leaders of the programme. The need is to have a research programme consisting of a number of related topics in an educational area over a period of time, with an effective system of monitoring, periodic review, feedback, replanning and so on. Such a systematic approach, replacing the present widespread ad hocism would provide the much-needed input to improve the productivity of research. Team planning and steering of research will ensure continuity.

Apart from these shortcomings, educational research suffers from an inadequate understanding of the research process. Under research process are included selection of a research problem, the sampling procedure adopted, the research tools, analytic procedures etc. These aspects of educational research need greater attention.

RESEARCH PROCESS

Research Problems

The selection of a research problem is the crucial decision a would-be researcher has to take. Once the problem is chosen, the direction of the inquiry is fixed. The research problems having been selected on an ad hoc basis, they are often trivial and have no relevance to the educational needs of the region or the country, its socio-economic and educational system. If research is to have an impact on the educational system, problems selected for study have to be such as arise from an intelligent analysis of the system, which would provide the conceptual framework in which they will be investigated. Unless and until a research scholar has adequately studied the educational literature pertaining to the area of his interest, analysed the existing status and identified the problem which he can discuss with confidence, justifying the need for research, he should not proceed with it. Selection of problem for investigation is thus a crucial aspect of educational research and should be given adequate attention. This is again linked with the quality of the research supervisor, who should, as far as possible, enrol students to work in his own area of specialization. Gradually, the practice of supervisors taking research students in areas of education with which they are not acquainted should be brought to an end.

Tools for Data Collection

Tools for data collection used to pose severe problems to educational researchers in the forties, fifties and early sixties. However, the problem has eased considerably during the last 25 years and this has given a boost to research in education. There are now half a dozen business houses who deal in educational and psychological research instruments. They are agencies for foreign tests, inventories and scales. There are also published standardized tests by Indian social scientists. These developments have benefited educational researchers.

But, like every new development which is misused as much as it is well used, the easy availability of research tools has resulted in unhealthy and un-professional activities. An innocent seeming and yet dangerous procedure is to select a problem where an easily available tool could be appropriately used. Such an approach results in the selection of a problem without an adequate educational perspective, devoid of any sound theoretical framework, and unrelated to educational or societal needs. The availability of a tool and its easy use determine the nature of the problem. This undesirable practice has to end.

A perusal of the researches in the four surveys of educational research so far shows that there are a few research tools in every research area which are being used on a large scale. At times, variables are selected and defined keeping in mind the tools which the researcher has pre-decided to use. This has resulted in turning out researchers who have developed no basic understanding of developing even simple tools of research. To develop good researchers, there is need to expose them to construction of tools as a part of postgraduate course requirements.

Sampling Procedures

Selection of sample is another item in educational research which has not been given adequate attention. A large number of researches are found to be based on unscientific selection of samples, resulting in outcomes of doubtful validity. If one finds that there are more than 220 research studies on correlates of achievement and yet no one can say with confidence the contribution of school-effects or teacher-effects or home-effects on a pupil's achievement, it is mainly because of faulty tools and/or inadequate and unscientific selection of sample. An analysis was made of the sampling procedures adopted by researchers in India. It was found that sample selection was far from perfect; it was subjective, influencing the reliability of findings. More than 60 per cent of the researchers used non-probabilistic selection procedures with small sample size, and a large number of problems per study. Of late, there is a shift from using non-probabilistic sampling to probabilistic selection of sample. This tendency has been on the increase decade-wide. In the forties, it was zero per cent. In eighties, 40 per cent of studies used improved and more scientific method of selecting samples. There is a need for using sampling theory in educational research designs to improve research quality. A second observation is that the earlier researchers used large sample size whereas gradually the sample size has decreased. A small sample size is not a disqualification for sound research, but in a large number of studies the determination of sample size is not based on statistical considerations. Scientifically determined sample size is necessary to reduce sampling errors. Educational researchers need to be well supported by statistical advisors in the selection of samples in relation to sampling procedures and sample size.

Methodology

Research methodology is important, but it cannot be a substitute for a real grasp of the theoretical/conceptual foundation. It is a very common experience to see that a research scholar thinks about the research tools and techniques of analysis even before formulating the problem or the hypothesis. Techniques are important, but they are secondary. The primary place is for a well-conceived educational problem, valid and reliable tools and scientifically selected sample.

Regarding research methods, some hard thinking is necessary. For many years, educational research was dominated by psychology. It aspired to scientific precision in research design and hypothesis construction and was preoccupied with measurement and statistical analysis. There was excessive reliance on empiricism. A large number of summer institutes in research methodology dealt with problems of quantifying data, quantitative methods, experimentation, adoption of statistical analysis, etc. All the elements of the scientific method were stressed. Teacher behaviour was quantified, organizational climate was quantified, the classroom climate was quantified, personality was quantified. This was definitely scientific, but, it gave an impression that there was no place for imagination, logic, and intuition in educational research. This has proved a barrier to its solving real educational problems. Against this, at times, we encounter anti-measurement waves, hostility to tests, and the selective and classificatory function of education.

Both the extremes have been harmful to educational research. The research process is creative rather than mechanical. There is ample scope for developing new methodology rather than fitting problems to existing methodologies. There is need for precision, accuracy and rigour. This does not mean that the research process is mechanical. What is needed is to realize that quantification, experimentation and generalization are,

no doubt, needed for precision and accuracy, but there are areas of research where these are not essential. The philosophy, sociology and history of education are some of the areas which need more thinking as far as research methodology is concerned. In short, what has to be guarded against in educational research is a lack of theoretical orientation and the resulting over-emphasis on practicality.

After 1970 one sees a growing volume of experimental research in education. This is desirable, but it is disturbing to note that experimental research has been considered as easy, compared to other types of research. The researcher follows mechanically the steps of an experiment and piously talks about controls, contamination, intervening variables, etc. What takes place is a somewhat slipshod experiment without the needed precision and rigour. The availability of the computer has resulted in the researcher not studying the logic of the various statistical techniques. Dichotomous variables are treated as continuous variables, and the mean score for sex may be 1.3 to 1.7—the quantification being adapted to fit the requirement of the computer, without regard for research ethics. T-tests, F-tests, and regression analysis are used indiscriminately, as if non-parametric statistics do not exist. It is painful to find a researcher stating a problem in such a way that he can use the q-sort technique, or another stating that in order to apply the chi-square test, the following hypotheses were formulated. All these are the outcomes of an undue emphasis on techniques of research as against the construct of research. In order to set standards in educational research, the appropriate use of different methodologies of research and of various statistical techniques needs to be driven into the minds of would-be researchers.

Analysis Procedures

During the last two decades, there has been a sharp rise in the use of multivariate analysis in research in education. A close examination reveals that those universities which have the facility of computer use in the vicinity have encouraged multivariate studies. The use of factor analysis in test construction in India dates back to the early fifties. Factorial studies, not merely in test construction but in predictor studies, are not uncommon. The availability of computer programmes has facilitated its use. Next to factor analysis, step-wise regression analysis and multiple correlations are the common forms of analysis popular with research scholars as computer programmes for such analyses are readily available. Whatever the reasons, this is a healthy trend, because educational research inherently involves the interplay of more than one variable. The variables may be either predictor variables or criterion variables. This trend has to be encouraged. We seldom seek to predict educational outcomes from a single variable and we seldom assess them with a single-criterion variable. Of course, there are a large number of studies, even in the eighties, where many variables are treated one by one, with a series of univariate analyses. Such analyses overlook the fact that any variable taken in isolation may affect a criterion differently when it acts alone from the way it will act in the company of other variables. It is at times forgotten that multivariate analysis can throw light on how each variable affects the criterion and what its contribution is to the relationship. Of late, a tendency has developed to use sophisticated tests even where simple tests give better results and the commendation of multivariate analysis should not be understood as an encouragement of the use of sophisticated statistical techniques merely for the sake of appearing 'modern'. Sound research methodology and valid interpretation of data require that variables should not be studied in isolation but in unison, so as to ensure that the interaction effects of variables on the criterion variable are not missed.

Some researchers have used both univariate and multivariate analysis. This is because of lack of understanding of the potential of multivariate analysis to provide more reliable results than univariate analysis. Young researchers need a sound training in the use of multivariate analysis for faithful interpretation of their data.

Amongst the four thousand and odd studies covered in this volume, there are hardly one or two that have used canonical correlation analysis. The application of this type of multivariate analysis needs more effort, more emphasis and more training. What is true of canonical correlation analysis is equally true of discriminant analysis, cluster analysis and path analysis also.

The researcher needs to be fully acquainted with all major forms of multivariate analysis, the logic of using them, interpreting the results, the merits and limitations of each form, and, finally, an adequate training in the judicious use of one particular form. This would contribute a lot to improving research studies in education and other social sciences as well.

NEW DIRECTIONS IN EDUCATIONAL RESEARCH

A typical researcher in a social science department hides in his shell, seldom discusses his research with his colleagues and never with persons from other, even related, disciplines. What is true of social science research is even more true of education. A colleague once told the author that he knew a social scientist who was never engaged in research activities and yet there was never a year when he did not present a paper based on empirical data in a national forum. For quite a few researchers, research is a private activity. This stance cannot be accepted. Every human/social phenomenon gets affected by the entry of new items of information and knowledge. Research results in production of new knowledge; it slowly and imperceptibly influences social phenomenon and social/human behaviour. Research is thus a social activity. It is too important to be left as a protected preserve of an individual. To be productive, research has to be a group activity. This would avoid the pitfalls into which individually steered research is likely to slip.

Further, to increase its efficiency, to improve its quality, and to hasten application of its findings, research has to be interdisciplinary. The country has discussed the need for interdisciplinary research for more than two decades; the earlier surveys have also discussed this problem at length. We would only say now that this has to be accepted with conviction by social scientists.

New Directions—Where?

Research activities in education are going on without any coordination. At the national level, the UGC, NCERT, ICSSR, ICHR, NIEPA, and a few other bodies either undertake research or sponsor and finance research. The Department of Science and Technology (DST), the Indian Space Research Organization (ISRO) and the Bal Bhavan Samiti also occasionally sponsor and finance educational research. The Planning Commission and the Ministry of Human Resource Development finance programmes of studies in various areas, including education. All this is welcome as it provides additional resources for educational research.

However, a large number of agencies sponsoring financing educational research may create problems of overlap and duplication, resulting in lack of coordinated growth of research in education. It is therefore essential that some form of coordination machinery in educational research be introduced.

National Coordination Committee

A National Coordination Committee for Educational Research should be set up to coordinate educational research efforts. Such a committee may have representatives of the UGC, NCERT, NIEPA, ICSSR and DST. Other financing agencies would keep this national committee posted with their research plans in education. The National Coordination Committee would,

(i) take steps to reduce the time-lag between the identification of a problem and the undertaking of research on it,
(ii) try to eliminate duplication of research effort,
(iii) take steps to intensify research in crucial areas like curriculum, including teaching and learning processes, educational management, and preparation of educational personnel, and
(iv) bring together related disciplines in coordinated research efforts with the realization that new ideas come from interplay between various disciplines, from the interfaces where the subjects border each other.

One of the first tasks of this committee would be to identify agencies and individuals who can undertake major national projects or who can be involved in them. These may be universities, state government educational set-ups or voluntary research institutes. They might have undertaken major national or state level projects or might have been involved in such research activities. Their particulars, availability of expertise in specific educational areas, etc. would be assessed. Subsequently, a data base would be built up of research institutes and agencies which have the potential to undertake state level or national level research. This data base would be updated on a continuing basis. Along with creating the data base, there should be constant assessment of these agencies in shouldering responsibility of state-level/ national level researches.

An important aspect of planned research is the identification of research problem on a priority basis. This is a crucial activity where there would be sharp differences and a powerful tug-of-war. Fortunately, in India, the committee can depend on a few important sources for problem-identification. The two documents National Policy on Education (NPE), 1986 and Programme of Action (POA), 1986, have listed a number of programmes of short and long-term durations. These sug-

gest corresponding studies which would lead to their smooth implementation. In addition, there are the four Surveys in Research Education, a number of research surveys in various social sciences, and priority areas identified by apex-level organizations. These sources would suggest a number of research problems. In addition to these sources, it would be essential to conduct brainstorming sessions with educational administrators, directors of elementary education, directors of vocational/technical/agricultural/health education, teacher educators, school principals, subject teachers and even parents. These activities may be farmed out to SCERTs, Centres of Advanced Study, research institutes, well-established colleges of education and university departments. The apex-level agencies, mainly, the NCERT and NIEPA, should involve the state leadership, viz. directors of education, directors of SCERTs, directors of DIETs, etc.

This would be a national-level exercise, the outcome being in the form of a list of research/research-based projects presented priority-wise by district, state and the country as a whole.

The main criterion for selecting a problem would be the potential of its findings to influence educational policy, programmes or practice. In fact, planned simulation exercises to assess this potential would be helpful in assigning priority to problems. The process of identifying problems offers a big opportunity for the in-service growth of participants. This concomitant outcome must not be forgotten.

The selected problems would need further scrutiny. They will vary in scope, size and coverage. Some may involve experiments in schools or nation-wide field testing. Problems may be at state level or national level. Problems aimed at improving classroom practices may need continued involvement of teachers. It would therefore be necessary to classify the problems against some criteria, as has been done below:

Class A: Those problems that can be researched into by a college of education or a university department of education in close association with schools and teachers.

Study on these problems may be undertaken as a co-operative venture so that data from a number of studies by schools/teachers could be pooled and analysed. Their findings are most likely to influence school practices. Research on these problems, based on grass-roots opinions, would build a body of teacher researchers who would herald a new process of educational change.

Class B: Those projects which can be undertaken by SCERTs with the involvement of centres of advanced studies, universtiy departments of education, DIETs. These researches may be directed towards the needs of the state and the state government would, most probably, be the beneficiary of the research findings.

Class C: Those projects which can be undertaken by the concerned departments of the NCERT/NIEPA as in-house activities in the form of departmental programmes.

Class D: Those projects which could be undertaken by the NCERT as joint, collaborative research on a national scale. These would be the basic issues on which national-level administrators want research-based solutions to national problems.

Researches under 'B' would form the programme of the SCERTs. Experience has shown that a large number of SCERTs need central guidance and support. The NCERT/NIEPA must provide this leadership.

Researches under 'C' and 'D' would form the programme of research of the departments of the NCERT/NIEPA. The appropriate department head and dean of research would monitor these programmes.

The Role of the NCERT/NIEPA

The NCERT and NIEPA have been carrying out dual functions. As a research body, each institution has its own research programme. As promoters of research, they finance educational research undertaken by external agencies. The NCERT is concerned with school education as a whole whereas the NIEPA is primarily concerned with studies in the areas of educational administration, management, planning and financing of education at all levels.

The new directions in educational research advocated here enjoin both these organizations to be clear about their role in building meaningful research activities in the country. They have to take up major, significant research projects in their departments. These would be at a post-doctoral level, the findings of which would be significant for the education system of the country as a whole. This clearly implies that small scale, minor research by individual researchers in the NCERT must gradually wither away. Each researcher must be a member of a team undertaking a major departmental project.

Every department of the NCERT/NIEPA would thus be engaged in national-level research activity. A department may have more than one project on hand, the number depending upon the problems to be investigated on a priority basis. Each department of the

NCERT and NIEPA would also plan major cooperative research projects through collaboration with a number of agencies in the states. There is already experience of such collaborative projects. The NIE-Hew Projects, the Developmental Norms Project, the Comprehensive Access to Primary Education Project, and the Primary Education Curriculum Renewal Project are examples of such collaborative research activity. This will be the major research programme of the apex-level organizations. In addition to these direct researches, the NCERT and NIEPA may finance approved research projects by external agencies.

The NCERT and NIEPA also have the major role of providing research findings for restructuring education. There is need to build up a body of young researchers. This is primarily the function of the universities and the UGC but the NCERT and NIEPA must support this activity, though not as a major function. Training programmes may be organized by the NCERT and NIEPA to support their major national projects—departmental and collaborative—but the major responsibility of training researches should be left to universities and the UGC. Regarding financing of research projects, the NCERT should primarily finance those institutions which fall outside the UGC's domain, but where the NCERT/NIEPA has a collaborative project with a university department, finances may be provided to such a department.

Building Research Teams

Research activities would be the responsibility of a team. To make research a non-private affair in institutes financed from public funds, and to benefit by intense interaction among researchers, teams should replace individual researchers. There might be exceptions, but, by and large, team research should be encouraged.

In the departments of the NCERT and NIEPA, researchers enagaged in research projects should be identified and integrated into functional teams which would collectively steer the research project. As discussed earlier care should be taken to ensure that the interdisciplinary nature of problem is not forgotten. Nevertheless, irrespective of the nature of research problems—interdisciplinary or within a discipline—research should be steered by a team. The 'team' aspect of research leadership is imperative and should be considered non-negotiable. The team may evolve its own modality of functioning, but the members of the team should accept their responsibility as joint *and* several.

Research teams should also be built in SCERTs and DIETs. Accepting the fact that there is no tradition of research in SCERTs, knowledgeable persons from the local colleges of education and departments of the university may be co-opted to the team.

The NCERT/NIEPA should also build teams to steer departmental research and collaborative research.

Regarding national collaborative projects to be steered by the NCERT/NIEPA, the executive teams may be local, but broader committees involving the users of the research and the state leadership should be formed. The important thing is that users of findings should develop a feeling that they are involved in the research.

Every research team may co-opt experts in sampling procedure and research design. As pointed out earlier, researches during the last five decades have revealed the mostly slipshod way of selecting samples which made generalization difficult. The sampling expert should be involved even while preparing the proposal and his leadership should help in finally selecting the sample and deciding the sample size. He should help the team in every possible way so that after the research is completed questions/doubts about the sample do not arise.

An expert in research methodology and research design should also be involved at the time of preparing the proposal and again at the time of data analysis.

Team research is difficult, but the success or failure of a major venture in the social and scientific/technological field has always been the result of the effective functioning or otherwise of the team. Team research is a new culture. It has to be nursed carefully.

There are no stipulations regarding the size of a team. Experts in various areas may be invited as and when the need arises. It is more important that the spirit behind interdisciplinary research and concept of team research be imbibed than that any particular form of team-work be adopted.

Research Findings Seminars

Research has to help practitioners. If this is so, practitioners must understand research findings and their implications. This is not happening and the practitioners are not aware of researchs in progress, and how they could benefit from them. It is suggested that, once a research study is completed and its findings established, a seminar of professionals and administrators should be

organized where the findings and their utility would be discussed. Potential users of the findings should use the seminar sessions to present difficulties they anticipate in utilizing the findings and satisfy themselves about the practicability of implementing/incorporating the findings through changing their programmes and practices? It would be essential to consider variety of situations and the impact of research findings in all these contexts. Extension workers, whose main task is to take research findings to schools, should be active participants in these programmes. Unless they have full knowledge of the research findings, they cannot be expert salesmen of new educational products.

Each research completed should be fully described in simple terms in a bulletin that might be titled 'What Research Says to the Educational Practitioner'. The extension worker will take the research findings to the field and provide feedback. The researcher would then use consumers' reactions in further refining research activity.

Educational Research Data Storage and Retrieval

It is an appropriate time, and facilities for this exist, for developing an education research data base with retrieval facilities. Already, the Society for Educational Research and Development, Baroda, has developed a data base of research titles up to 31 March, 1987. This is just a beginning. The NCERT/NIEPA could consider a planned programme of developing a data base of educational researches along with abstracts and start a research service. With computers, this is now possible, and funds are available for developing a research data base at almost every university.

Lastly, the proposed new directions in educational research enjoin NCERT/NIEPA and research institutes to organize activities for training educational researchers at all levels. The most urgent issue in educational research is that of attracting, selecting and training the next generation of researchers. The country needs a strong body of professional researchers in education. They can be novices; they may be fresh graduates, but for these young persons, educational research must be a career. Apart from training in research centres, they should be provided experience of serving as genuine research apprentices. During this experience, the young researcher will be imbued with the value orientation a researcher needs and a keen desire to delve deep into educational phenomenon with an open mind. It is this heuristic attitude that young researchers need to cultivate, perhaps more than such research techniques as the use of the t-test or analysis of variance. To attain this it is necessary to formalize curricula at different levels, cast them into meaningful modules and use them for training professional researchers. Apart from this training of career research workers, regular post-graduate students of education must be provided training in research methodology with a substantial input of project work.

Teachers with a broad understanding of educational research have been known to be good change agents in an educational system. Considering this, one cannot help saying that the country has allowed educational research to drag for a long time. The UGC's stipulation of a Ph.D. for promotion and government's declaration tagging three advance increments in salary for Ph.Ds. has created a situation where the rush for Ph.D. degrees will be tremendous. If the country is currently turning out an average as one Ph.D. in Education every third day, before the end of the century, we will get a new Ph.D. in Education every day. Mass production of Ph.D. degree holders will definitely lead to falling standards in doctoral research unless an effective mechanism of checks and balances is built into the system.

For educational development and improvement, the country will have to depend on project research. These new directions in educational research are primarily directed to project research, sponsored research or commissioned research and researches in national institutes.

IN CONCLUSION

There is at present a growing emphasis on the implementation of research findings as well as implications of research for educational policy, programmes and practice. While opinions on the validity of such an emphasis is divided, any effort or emphasis that may substantially affect educational policy and practice for good or ill or which may affect educational research itself must be reviewed and critically assessed.

Regarding the ultimate effect of research, it may be said that research has value only when its results influence or promote action either directly or indirectly. The nature and organization of our educational system make the educational administrators at the centre responsible for administrative policies and educational programmes. Both these are further derived from the directions indicated in the National Policy on Educa-

tion. Consequently, the administrators at the centre and in the states are in key positions to determine whether or not findings of educational research are being used or are to be used. Thus, in promoting an expansion of an educational research programme, most pertinent questions are, What do administrators want?, What do they expect of educational researchers?, How would they put the accumulated research findings to use?

During the last few years there has been a growing awareness that research in education, as indeed in other disciplines, needs to be promoted with a much greater effort, and investment of resources better managed. As a result, the number of institutions and number of research projects all over the country have increased to a considerable extent. More resources have been allocated to encourage and expand research. However, the National Commission on Teachers—1 had 'painfully to place on record our assessment that both quantitatively and qualitatively, the record of research is far from impressive. It is very undeveloped and is quite insufficient to serve as a basis for policy formulation and administrative decision-making'. The administrator tends to look derisively at any proposal for research suggested to him. He has his own reasons to look at researchers and research with suspicion. Many administrators believe that researchers have nothing to contribute to educational improvement. According to them, research activities in universities and research institutes are highly theoretical and pedantic and have nothing to contribute to school improvement. According to them, the research reports are so limited in scope and so inconclusive that administrators feel that they will be taking major risks if they think of changing systems on the basis of such inadequate findings. A large number of administrators find it difficult to comprehend research reports which are usually full of research jargon. There is a view among research-oriented administrators that educational research is done under non-typical, 'ideal' conditions, which renders their findings of little value for school administrators.

In the post-independence period, there has been a tremendous growth of educational research activities. The establishment of the NCERT was a momentous development that encouraged the feeling that, very soon, education reform would be research-based. There were many changes and new programmes in curriculum development, in learning, teacher education and so on, but nowhere was there any evidence that the decisions had been prompted or influenced, even to some extent, by some research findings. The country declared its first National Policy of Education in 1968. Its base was the recommendations of the Education Commission (1964–66), not any findings of research undertaken or financed by the NCERT. The country undertakes major exercises periodically to prepare educational plans as part of the Five Year Plans. Even this planning is hardly ever based on the findings of the educational surveys undertaken periodically by the NCERT on the suggestion of the Planning Commission.

The science curriculum at the school stage was reviewed four times since independence; however, no research was planned to evaluate the science curriculum nor was any planned study in school curriculum undertaken before changing it. The National Commission on Teachers—1, wanted to know how the joint councils of teachers in different states were functioning. No study was available. They wanted information regarding the transfer policies followed by different state governments; but no research study was available to help them to make recommendations. These instances only show that researchers have failed to identify crucial problems for research. The administrators, on the other hand, have failed to establish rapport with the researchers and take the benefit of the academic expertise in the restructuring of education. If we have to imporve the quality of our decision-making in education, the present apathy to educational research and field study must go.

The Education Commission (1964–66) had recommended, more than two decades ago, that there should be a deliberate effort to increase the allocations for educational research, the goal being to devote at least one per cent of each state's budget for the purpose. Today, almost all states and Union territories have State Councils of Educational Research and Training or State Institutes of Education. Research workers of proven ability have not been appointed to them; no planned research to provide answers to educational questions faced by the education system of the states is undertaken. Even a quarter of a century after the establishment of the apex body for educational research, educational reform and restructuring continue without a research base.

The research scenario in the country is grim. Nevertheless, the national dialogue that preceded the adoption of the NPE, 1986, has shown that both academicians and administrators have realized the need to change their approach to restructuring the educational system. The new directions for educational research suggested may help accelerate this process. In all countries, concern is shown at the dysfunctional nature of

educational research. It must, however, be said that research is not completely dysfunctional. The need is to diagnose the weakness in the educational system, analyse research findings and, without waiting for further research, apply relevant research findings to improve educational programmes and practices. The need of this decade is to understand 'what research tells the practitioner' and act.