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TO THE READER

Pakistan Journal of Education is dedicated to the learning system rapidly growing in Asia and the world over. The Journal welcomes studies, research and review papers dealing with past, present and future perspectives of education, with a view to awakening further interest in the newly growing discipline and opening new vistas of research.

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EDITORIAL

EDUCATION AND SCIENCE

A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring;
There shallow draughts intoxicates the brain,
And drinking largely sobers us again!

Alexander Pope

Education and science seem to be the wheels of a cart, carrying a coherent and collaborated convoy of the community. The both are required to be even and uniformed while running with an equal pace. If there occurs a break in the process, the peculiarity of the passengers, escorted therein, would become an immersing lots. Thus, their destination would diminish afar and the destiny could come across a number of clutches. Then, it is apprehended, the life may look lingering in luridness. It may be called a barbaric bashi-bazouk, but not a civilized, cultured and educated one!

To be sober and solicitous, advanced in social development, refined and enlightened, and out of the sphere of barous habits, an individual has to be educated. He should have abundance of knowledge duly bestowed upon by the Almighty. Through systematic instruction and cohortative course of study, a man is required to develop his character and to broaden his mental horizon. Substantively the human being has to educe its existence. But, all this is not the final goal. Beyond this, there lies some other fact – and that is Science!. Only to adore oneself with the rays of knowledge – may be a niche in the temple of fame, but contradictory to the Divine Rule which vividly indicates:

Each and every thing,
Of heavens and earth,
Has been subdued,
For thee alone!

For this deed, ordained by the Divinity, one should have discretion to divulge the deepened doctrinaire of the universe. This very task cannot
be accomplished without having a thorough command on science. Thus, it becomes evident that both "education" and "science" are reciprocal and inseparable. These two wheels of a civilized environment play a pivotal role in making the society most prosperous and prestigious. If we have only one of them working at all – we are at loss. For development process, the two – wheeled vehicle is required to be functioning forcefully and efficaciously.

A critical study of the history reveals that there had been enormous emphasis on acquiring education and science in high minded men during different ages.

It may be elaborated here that acquired knowledge means the knowledge gained through personal experience and reflection; as well as through experience and reflection inherited and obtained from other people. On the contrary, science is in fact a mode of acquiring knowledge through direct physical experience and testing its nature, relation and application through experimental method. In short, science aims at circumvention, precision and application of our experiences.

As is evident, a remarkable keenness of Muslim scholars to gather knowledge and promote sciences and technology appeared very early in the history of Islam. An incentive to general intellectual advancement and a start for town planning, irrigation, navigation, warship, etc, was given during the early caliphas.

Since then, Muslim scientists continued to pursue all form of scientific and technical knowledge with outstanding success. They intensively studied Geography, Geology, Biology, Physics, Astronomy, Chemistry, Medicine, Engineering, Architecture, Agriculture etc, in an unrestricted manner with the help of real experimental and scientific method. All this went hand in hand with the true spirit of spreading education in logic, literature, religion, philosophy and ethics. Such circumstances never did create a conflict amidst the scientists and educationists. This very distinction of scholarly and scientific leadership had always been retained in the world of Islam for hundreds of years and still being continued without any coercion and crunch.

After having entered into the threshold of 21st century, we are bound to get the two-wheeled vehicle of education and science running more forcefully, efficiently and even rapidly. For the educationists of our
country, as well as of the Third World, there should be no difficulty in planning for an education which copes with modernity, atomic age, conquest of space and elimination of all form of barriers between Easterner and Westerner. The earth and heaven, the space and sparking stars, all are made but for all!

At the end, I would like to mention that our venerable Vice-Chancellor has decided to widen the sphere and scope of AIOU so as to engulf all sorts of discipline whether pertaining to formal or informal system of education. Through this way, we can cater all categories of contents for our distinguished readers. Even it would provide an extensive platform for our learned contributors to express their valuable thoughts on the subjects beyond the norm – "Distance". So, this very "word" has been deleted. Come along dear contributors and join our hands in developing science and education at equal space and speed.

Dr. Mahmudur Rahman
Editor
Twenty Five Years of Allama Iqbal Open University

By

Dr. Anwar H. Siddiqui*

The Allama Iqbal Open University was established in June, 1974 with the main objectives of providing educational opportunities to the masses and to those who cannot leave their homes and jobs. In the last 25 years, the University has more than fulfilled this promise. It has opened up educational opportunities for the working people and has provided access to the females at their doorsteps. It has also done pioneering work in the field of Mass Education. It is now breaking new grounds in the fields of professional, scientific, and technical education. It is attempting to reach out to the remotest areas of Pakistan. It is also attempting to harness modern Information Technology for spreading education in Pakistan.

The idea of Distance Education was first mooted in UK in late 60’s by the then Prime Minister, Mr. Harold Wilson. He was of the view that educational opportunities must be provided to those who might have missed better education due to early employment and wish to upgrade their knowledge and skills in their spare times in the evenings at home. The UK Open University was thus established in 1969. Since then, it has become a major institution of learning in UK and has opened up opportunities for millions of working people. The gospel of Distance And Open Learning has, since then spread throughout the world. More than sixty open universities are operating around the world on the basis of distance education. Modern Information Technology has made the task of distance education, much more easier and effective.

The AIOU, when established in 1974, was the Second Open University in the world and the first in Asia and Africa. Thus, it speaks of the foresight of the policy makers at the time. As the last 25 years of AIOU have proved, distance education has opened up new opportunities for millions, particularly women, and supplemented the efforts of the Federal

* The writer is the Vice Chancellor of AIOU and also the Patron-in-Chief of this Journal. He had written this article on the eve of Silver Jubilee Celebrations held in the University on 15th November to 20th November 1999.
and Provincial governments in a big way and without becoming a burden on their resources.

The idea of distance education assumed greater relevance and acceptance in Pakistan due to the factors of poverty and relative deprivation of women. The rate of literacy, incidence of drop-outs, and excess to higher education is much lower in the poorer classes of Pakistan. The incidence of poverty is much higher in the rural areas, where formal education is much less established. The rate of literacy and education is much lower for females in Pakistan, particularly in the rural areas, due to poverty and conservative traditions. Many conservative parents, under the pressure of old age traditions, do not allow their daughters to go out to the formal schools. The AIOU, through its system of Distance Education, has thus provided educational opportunities to these homebound girls and women. This explains the reasons why the majority of the students enrolled with This University are females.

Of recent, the University is trying to fulfill another current need. Professional and technical education in Pakistan is becoming very costly, specially in recent years, because of Government's policy to encourage private sector in these fields. The lower middle class and poorer classes are being marginalized and their children have very little chance to get higher education in fields like Business Administration, Computer Science, Medicine and Engineering. The AIOU is attempting to meet this challenge and to keep a window open for these classes by keeping the costs at the minimum and by creating a Students Assistance Fund.

Teaching Methodology

The difference between the traditional formal system of education and open distance system of education lies essentially in the Teaching Methodology. As far as the curriculum is concerned, it is more or less the same. The University is part of the UGC system and abides by the mutually agreed curricula. The difference essentially lies in terms of teaching methodology and for reaching out to the people in the far-flung areas of the country, and even at their doorsteps. The University employs non-formal method of Correspondence, Radio and Television broadcasts, special textbooks and reading materials prepared on self-learning basis, part-time teachers (tutors) engaged nearest to the students, a system of Study Centres for applied training spread out throughout Pakistan.
i. **Study Centres and Information Technology**

The concept of Study Centres was first employed in the University for teaching practice in its educational programmes. Students enrolled in its PTC, CT and B.Ed programmes were given teaching practice in the selected schools, designated as the Study Centres. Of late the concept of Study Centres for applied and practical training has been used extensively for professional and technical; for example, Business Administration, Computer Science and Information Technology.

ii. **Radio and TV Programmes**

The traditional method of teaching through correspondence and providing guidance through tutors was gradually supplemented by Radio and Television Programmes. The development of IET and its technical competence has made it possible for the University to produce of high quality, the audio and video programmes; which are regularly broadcast on Radio and Television, and are also sent to the students in the form of Audio and Video cassettes. The University is presently allowed one hour every day on PTV-2 which is not sufficient for providing meaningful support in the large number of degrees and diplomas offered by AIOU.

iii. **Latest development in the Communication and Information Technology**

The latest development in the Communication and Information Technology, particularly the Satellite and the Internet, has revolutionized the system of Distance Education. Satellite and Internet are being extensively used as a medium of instructions as well as a source of information. As we harness this technology for distance education, the traditional correspondence method and tutorial systems may be replaced by distance teaching through the Satellite and Internet.
Current emphasis in AIOU's Academic Programme

For the last two years or so, the University is trying to fill the gaps in its Graduate and Post Graduate Programmes and make a major thrust in the field of professional, scientific and technological programmes. Previously, the University was only offering the Intermediate (Arts) Program; now the Intermediate (Science) has also been launched. BBA and MBA were offered through distance education with correspondence method only, resulting drop-outs in large number, BBA (Hons) and MBA Programmes have now been launched with the provision of Study Centres, throughout Pakistan and with ready guidance available to the students in professional subjects. The University had started M.Phil Programmes in Urdu, Islamic Studies and Iqbaliat, but there were no M.A. Degree offered in these subjects. Now the University has launched MA Islamiat and M.A. Urdu Programmes. In the field of education, there was no M.Ed. Programme. Although its B.Ed. programme was very popular. The M.Ed. Degree programme was launched in 1998 with tremendous success. The University receives more than 30000 applications in every offering and can only cope with about 3000 with great difficulties. The B.Sc. Computer Science was launched in 1997, keeping in view the national as well as international demand. With the help of about 60 Study Centres throughout the country, it has been a tremendous success, and almost 1500 students are getting standard quality training at very low cost.

Faculty of Islamic Studies

The Faculty of Islamic Studies has been separated from the Faculty of Social Sciences and Humanities where it was not getting sufficient attention and resources. The Faculty has been divided into Departments of Quran and Tafseer, Hadith and Seerah, Fiqh and Islamic Law, Islamic Thought, Culture and History, Arabic and Muslim Ummah in the Modern World. Efforts are being made to recruit qualified staff for these departments.

The Faculty is already offering M.Phil in Islamic Studies and teachers training programme in Arabic Teacher Training Course. The standard of its M.Phil Programme is already well recognized. The University has now started an M.A. Islamic Studies with a difference unlike other universities. Our degree will emphasize in-depth knowledge of
Arabic and specialization in one of the six areas in the second year of study.

Dars-e-Nizami

In the last 50 years or so, many attempts were made at improving the study of Deeni Madaris and integrating them into the main stream of the educational system, without any success. The University has however, been able to muster considerable support from religious scholars and has convinced them that their syllable should also include modern language, social sciences, mathematics, etc. to enable their graduates to find jobs and to get assignments abroad in Mosque and Islamic Centres. The University Dars-e-Nizami Program, launched in 1998, has been well conceived and we plan to consolidate and expand it further.

The University has considerable experience in teaching of Arabic specially through the use of Television. Al Lisan-ul-Arabi, the first successful programme on Television was launched by the University in its early days. The Government is presently emphasizing of teaching Quran with meanings at the school level. The University plans to restart the Arabic programme on the Television with much improvements. Whereas its present programme for training of Arabic Teacher is highly successful, we are hoping to launch a Master’s Degree Programme in Arabic also.

Iqbal Studies

The University is named after the great poet, philosopher and thinker, Allama Muhammad Iqbal. His poetry and thoughts had not only inspired the Pakistan movement, but are also a beacon of light for the Muslims for all times. The University has, therefore, established a specialized department of Iqbal Studies, which has contributed greatly to research, publications, and teaching in the field of Iqbaliah. The M.Phil degree, being awarded in this field by the University, is well recognized. The University has recently started a Ph.D. programme in Iqbal Studies also.

Short Term Educational Programmes (STEP)

In addition to certificates, diplomas and degrees, the University has also started Short Term Educational Programmes for the benefit of those who wish to take up only one course and not necessarily work for diploma
or degree. We are offering many useful programmes of public interest including Computer Literacy under this scheme.

**Regional Campuses**

The University has established 32 Regional Campuses in various parts of the country to coordinate and facilitate decentralized system of education of the University. The Regional Directors keep a roster of qualified teachers and experts in each field of Study in their area and enlist them as the University's Part-time Tutors. Each group of students is entrusted to a tutor for guidance. Assignments written by the students are evaluated by the tutors and returned to them, with their comments. The Regional Campuses also arrange practical training, teaching practice, workshops and seminars and facilitate holding of examinations in their own areas. The University is adding four more Campuses in Baluchistan to increase its out-reach in the vast Province.

**Historical perspective**

In the first five years, the University started Basic and Functional Programmes. In the late 70s or early 80s the University started General Education Programmes like Matric, Intermediate (Arts) and B.A. etc. The Mass Education Programme were also started in April, 1980. In the late 1980, B.Ed. and some Post Graduate Degree programme were started. The early 1990, was the year of opening up of our Teaching Education Programmes, like PTC, CT and B.Ed. by relaxing the admission requirements, resulting in tremendous upsurge in the enrolment. The period from 1997 to 1998 marks the expansion in Post Graduate Programmes in general and professional, scientific and technical programmes in particular.

**Vice-Chancellors**

The University was blessed with a number of outstanding Vice-Chancellors to guide it towards attaining its objectives. The University started its operations under the leadership of Prof. Abdul Hashim Khan in 1974 in a rented building. His tenure was, however, very short. In a real sense, Dr. W.M. Zaki was the first Vice-Chancellor of the University. He laid down the foundation, defined its objectives, outlined its teaching methodology and laid down the regional and field organizations, with the help of experts from UK Open University. He was followed by Dr. S. M.
Zaman (presently Chairman, Council of Islamic Ideology), Prof. M. Mohiuddin and Dr. G.A. Allana. The tenure of Dr. G.A. Allana was a period of expansion in its operations and regional network. After Dr. G.A. Allana, Dr. W.M. Zaki, came back again to guide the affairs of the University. He was followed by Dr. Muhammad Tariq Siddiqui (presently Vice-Chancellor, Quaid-i-Azam University). Although his tenure was short, he consolidated and streamlined the admissions and examinations system of the University and opened up opportunities for a large number of teachers by relaxing admission requirements in PTC, CT and B.Ed., etc. His period saw a great upsurge in the course enrolment. Dr. Muhammad Tariq Siddiqui was followed by Prof. Javaid Iqbal Syed, who was Dean of the Faculty of Social Sciences and Humanities at the University. He was first to perceive the need for starting courses in Computer Science. He also started the programme of Short Terms Courses (STEPS). The present Vice-Chancellor joined the University in February 1997 with eleven years experience at the International Islamic University as its Vice President and long experience in administrative training institutions like National Institute of Public Administration, Karachi, Pakistan Administrative Science College, Lahore and Federal Judicial Academy, Islamabad.

Overseas sponsorship

The University was established with the technical assistance of the UK Open University. The ODA Project continued for almost twenty years from 1976 to 1994. The ODA helped not only in academic development, but also provided assistance for the setting up of the Institute of Educational Technology (IET), University's Press and the Data Processing Centre. Academic programmes were assisted through the Integrated Functional Literacy Project (IFLP), Functional Education Program for Rural Area (FEPRA), and Basic Functional Educational Program (BFEP).

Several other countries, for example, the Government of Netherlands, helped the University in the Matric Women Project under which several pilot projects were launched throughout Pakistan, reading materials were developed and Matric Women Programme was launched, which has now been extended to the males. The Government of Norway funded the New Primary Teachers Orientation Course (New PTOC), for the training of primary teachers. The Programme continued for ten years and was a tremendous success.
The Government of Japan (JICA) helped the University in modernizing and updating the Studios and equipment of the Institute of Educational Technology. We are now negotiating with the JICA to start the second phase of this Project by giving us the latest digital technology for producing high quality educational films.

By now, all the foreign aided projects have dried up. The University is attempting to secure assistance through the Social Action Programme.

Enrolment Trends

The University had made very humble start with only a few functional courses in 1976. The number of Certificates, Diplomas and Degrees increased to 17 by 1989 with a course enrolment of 1,90,446. The enrolment has jumped to 9,07,834, and the number of Certificates, Diplomas and Degrees increased to 255 in 1998-99. The significant increase in course enrolment at the University is explained by introduction of a number of professional and post graduate programmes in the last two years including B.Sc. in Computer Science, BBA and MBA (with Study Centres), M.Ed. M.A. Education, M.Sc. Physics and Dars-e-Nizami. The enrolment is likely to increase even further with the launching of many popular programmes like LLB and B. Tech in the near future.

The University has so far issued 409,293 certificates, diplomas and degrees in different disciplines.

International Awards

In recognition of its pioneering work in the field of non-formal and basic education, the University has received two International Awards from Unesco i.e; NOMA Award and the Raja Roy Singh Award.

Budget and Finance

The University had started with a modest budget and was heavily dependent upon the Government and foreign assistance for its programmes. With the expansion in its activities and diversification of its programme, the situation has tremendously changed over the years. The University is now meeting almost 86% of its current and development needs from its own resources and the Government grant is only about
14%. The University budget stood at Rs.2.83 million in the first year of its establishment in 1974-75 which was entirely a Government grant.

The budget of the University increased to Rs.210 million in 1996-97 with the Government grant contributing about 31.2% of the total budget. In the current year (1999-2000), the University budget stands at Rs.610 million with Government grant contributing only 14% of the budget (Rs.85 million). The University is thus fast moving towards total self-sufficiency, and its budget is fully balanced.

Endowment Fund

The University gathered its savings lying idle in various accounts and started an Endowment Fund as per the AIOU Act and Government Policy, in 1997 with an initial capital of Rs.150 million. The capital in the Endowment Fund has reached within three years to Rs.418 million. The capital is invested in the Government Savings Schemes. The income from these investments has been ear-marked only for the development programmes of the University, by the Executive Council.

Development Activities

The University has embarked upon a development programme with the help of income generated by the Endowment Fund. The development projects includes essential academic and non-academic buildings, including three academic blocks on the Main Campus, a mosque and a clinic which are nearing completion. A hostel for 160 post graduate students and expansion in the University Press Building are under execution.

Of all the 32 Regional Campuses of the university, only the Lahore Campus is operating from its own building. The other Campuses were operating from rented houses, which are not conducive for academic activities nor do they provide any facility to the students. The University has therefore, started acquiring land for its Regional Campuses and constructing the campuses as per the academic requirements. The Campus at Multan has been completed and was inaugurated by the worthy President of Pakistan on July 10, 1999. The construction work at the Regional Campuses of Mirpur (AJK) and D.I. Khan has started. Tenders for the Regional Campuses for Quetta and Karachi have been called. Land has been acquired at several other places including
Sargodha. The new campuses buildings provide for spacious Auditorium for students activities, Library, Computer Centre and Examination Halls, etc.

Computerization

Computerization of the University’s Data Processing System linking the regions with the Main Campus through E-mail/Internet, providing internet facilities in the University Library on the Main Campus as well as the Regions. Training of teachers and Staff has been started. Almost 300 PCs have been inducted into the system. This has facilitated data processing of almost a million course enrolment in admissions, examinations and mailings, etc. This has also facilitated the students in terms of redressal of their complaints and free flow of information with respect to Admission and Examination, etc.

Our ultimate aim is to replace the traditional correspondence method with the Internet. As our teachers get trained in the use of Computers and Internet, the system of Distance Education will make a quantum jump.

Faculty Development

A major component of the development programme of the University relates to Faculty Development. Substantial allocations have been made from the Endowment Fund for development of the Faculty in Pakistan and abroad. Two teachers have been sent abroad for Ph.D, and several others have been given assistance for pursuing their Ph.D’s in local Universities. As the expenditure on buildings declines gradually, the allocations for Faculty Development and academic programme will increase.

Television and Radio Programme

The Institute of Educational Technology (IET) has produced 445 Television Programmes and 2345 Radio Programmes. The number is likely to increase if secure more time on PTV-2 or get our own license.
Students Assistance Fund

The University has levied a charge of Rs.10/- per student course which is generating almost Rs.10 million per annum. This amount is being collected from all the students but is earmarked for assistance to only deserving students particularly in the relatively costly courses in Computer Science, Business Administration and Physics, etc.

FUTURE PLANS

Academic Programmes

The University is working for launching of additional Graduate and Post Graduate Programmes in the field of Natural Sciences, Law, Computer Science and Islamic Sciences. Ph.D. Programmes would be developed in several disciplines to overcome the shortage of researchers and teachers.

Educational Television

We have the technology and the expertise to run the Educational Television on our own. More than 50 Engineers and Producers from the IET have been trained in UK and Japan. Our Studios are well equipped with latest technology with the help of the Government of Japan (JICA). Unfortunately, the Educational Television (PTV-2) started with the help of the Government of Japan could not be fully utilized for the purpose it was established. In the prime time, this channel is also being used for entertainment purposes. The AIOU is allotted only one hour at odd hours, in the afternoon. We have, therefore, decided to apply for a license to start a Radio and Television Station of our own or to request the Government to hand over the Educational Television to the University.

Teaching through satellite

Presently teaching through satellite is very costly. As soon as Pakistan launches satellite of its own, we will begin our educational programmes through it and try to reach out all corners of the country through this medium.
Teaching through Internet

As soon as our teachers are well trained in the use of Internet for teaching purposes, and the access to internet is enlarged by reduction in costs of PCs and internet connections at home, we plan to gradually shift from correspondence method and the tutorial system to the system of Distance Education through internet. We are hoping to develop a Wide Area Network throughout Pakistan, to develop and to launch our own Website for starting our educational programmes through the internet.

Science and Technology – Agreement with Pakistan Atomic Energy Commission

In the last 20 years or so, the University lagged behind in the field of Science and Technology on the assumption that it is not possible for AIOU to arrange practical and applied training in these fields. The difficulty has now been overcome with the assistance of sister institution and the private sector.

A break-through has been made with the singing of an agreement with the Pakistan Atomic Energy Commission wherein the experts from the Commission will assist the University in the development of standard textbooks and reading materials, in teaching and most importantly in the provision of practical training in their well equipped laboratories and workshops. M.Sc. in Physics has already been launched. M.Phil in Physics is likely to be launched in the next semester and we are preparing the programme of M.Sc. Chemistry. We are also discussing with the Pakistan Council of Scientific and Industrial Research (PCSIR), and will hopefully sign a similar agreement with them which will open up avenues for launching meaningful programmes in the field of science and technology all over Pakistan by using their experts and their laboratories spread over the whole country.

The Agricultural Department of the University is working on several Master’s Programmes including Agricultural Extension, Forestry and Animal Husbandry. The Master’s Programme in Animal Husbandry is being launched from the next semester.
Graduate and Post Graduate Programmes in the field of Engineering and Technology in the near future.

The University has also made a beginning in the field of Medicine. It has launched Post graduate diplomas in Eye Care, Nutrition and Dietetics with the help of experts and recognized hospitals around the country. We hope to launch the degree programmes also in the near future.

The advent of Internet has opened many avenues and vistas for launching many programmes in the field of Science, Technology and Medicine and we will offer relevant subjects with the help of Internet.

Epilogue

The AIOU, in the last 25 years has come of age, and has fulfilled its promise. It has proven to be a most cost effective method of spreading Mass Education in the country. It is supplementing the efforts of the Federal and Provincial governments in the field of education without putting a burden on their resources. It has provided educational opportunities to women and working people. It has opened a window for the less privileged classes.

The system of Distance Education has great potential for further expansion and growth. The University can contribute immensely in the field of literacy and primary and secondary education. It can take on the entire or at least a part of the responsibility of the Mass Literacy Programme with its vast regional network already on the ground. The next 25 years will Inshallah see the Allama Iqbal Open University growing into an even better and larger institution of learning in Pakistan.
Objectives of Education in 21st Century

By

Din Muhammad Channa*

Education plays a vital role in all the development process of the country. The manpower is provided to all departments and to every sphere of life by educational institutions. The individual, collective and regional as well as national progress entirely depends on the level of prevailing conditions and standard of education in the country. An improvement and welfare of society is solely on education. As such, education is means to achieve our national goals.

We expect the role of education in 21st century will be according to the aspiration of the public of the country and to achieve some of the following objectives in whole 21st century:

1. To create literacy surroundings throughout the country and achieve cent percent literacy rate.

2. To create scientific culture for accelerated easy progress and great success in all the fields. Emphasis will be laid on to spread scientific knowledge, to give birth to great scicultists like Doctor Abdul Qadeer Khan who may shine our nation throughout the world with new inventions.

3. To set mobile schools to educate and train people at their place of work, such as fisher-men in rivers, lakes and in the sea, farmers in their lands and the labourers in their industries.

4. To educate people through mass-media i.e. T.V. radio and through educational strips.

5. To create ethics through Quranic Education and Traditions of the Holy Prophet, scheduled step by step from primary to university level courses.

* The writer is an Assistant Professor, Department of Educational Administration and Instructional Technology, Faculty of Education, University of Sindh, Hyderabad, Pakistan.
6. To achieve material perfection through science and technology induction to compete the advanced countries of the world.

7. To stop privately managed commercial basis institutions as they are mockery for education.

8. To set free education from primary to university stage, with stipends for the taughts for their expenses on books, etc.

9. To bring change in the body politics, as in their view education is most neglected sector, since every year budget is kept very low hardly upto 3% for education which is nothing.

10. To allocate at least 50% budget for education sector to achieve the highest national aims of long terms, according to aspirations of the public of our country as well as in the context of world competition.

11. To build up creative, dynamic personality of individuals, capable of facing the truth, leading to reality for welfare of the society.

12. To provide special facilities for mentally retarded and physically handicapped children and adults.

13. To democratize educational administration with the active participation of representatives of parents, community, students, teachers, and officials.

14. To create love for the dignity of labour (Al-Kasib Habibullah) through real mobilizing spirit of education.

15. To strengthen national cohesion with love through educational process and promote social and cultural harmony.

16. To undermine, block and totally stop all kinds of corruption from the department of education. Copy culture will be stopped.

17. To appoint talented teachers purely on merit basis and select honest officers on the seniority ground.
18. To establish university in every District of our country and spread net work of colleges at least one in every Taluka and at least one secondary high school in every union council. Girls and boys primary school and Middle school in every village of country should be established.

19. To open libraries and book banks in higher institutions throughout the country.

20. To make education compulsory upto university level if education is made free upto that level, to create awareness and knowledge among people of the country.

21. To open more Agriculture Colleges, Technical Colleges, Engineering Colleges and Medical Colleges in every province of the country and to raise them step by step to the University level.

22. To make good and enlightened ordinances of the universities so as to avoid unrest among the students and teachers for progressive achievements in educational field.

23. To manage strict administration to ensure that all the educational institutions from primary to university level play their part well in the social order to achieve better results with high standard of education and provide gifted output to nation.

24. To administer in all departments of all the universities to produce more Ph.D students having specialization and excellence, in various fields.

25. To establish open universities in every province to provide educational facilities through correspondence and to use electronic media as T.V. and radio in this connection.

26. To make a permanent arrangement for adult education throughout the country till all the population is able to read and write.

27. To arrange for teacher trainings on time to time basis for better educational achievements.
28. To build standard designs of educational institution buildings and to provide audio-visual aids and furniture according to the requirement of every institution.

29. To increase proportion of women teachers from primary to university level so that boys and girls may study together in single staffed-institutions.

30. To improve quality of education, an adequate education material will be provided in the educational institutions, as library require to teaching kits and other audio-visual aids including T.V. sets.

31. To broadcast informative programmes, especially for school children at convenient hours during day and night.

32. To organize student squads for various tasks to develop national attitudes in the students to create in them productive services for the welfare of the community.

33. To make special programme of training in the skills of vocational interest to create skilled technicians throughout the country.

34. To encourage students to get more admissions in science and technical subjects instead of Arts subjects.

35. To produce efficient industrial workers, separate institutions for technical education has to be established as many as possible.

36. To open Pakistani languages in universities with the purpose of understanding languages and literature of one region in the other regions; to understand structure and customs, attitudes and motivations of the people of other regions. Arrangement for such research works in the universities has to be made to know the culture of the people of Pakistan.

37. To reduce highest rates of illiteracy, especially extra ordinary high among rural women in outlying areas.

In order to achieve all above mentioned objectives for real progress and development of country, every government of 21st Century will be
required to give top priority to education sector. And with open heart will allocate sufficient portion of budget, at least of 50 to 80%, during each fiscal year. If the nation will invest more, the benefit will be obtained more, and more may the nation shine.

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Analytical Discussion on Basic Education in Pakistan

By

Dr. S. Anwar Iqbal*

The criteria for universalization of primary education as suggested by the World Conference on Education for All (Jomtien, Thailand, March 1990) was the access to basic education for all and achievement of a functional and sustainable level of learning and life skills by a large majority. Since September 1990, over 150 countries have ratified the Convention on the Right of the Child, above all other human rights treaties.

The World Summit for Children, the first truly global summit forum, established a wide range of social development goals including universal access to primary education and completion of the primary cycle by at least 80 per cent of those enrolled. Over a hundred countries have been re-examining their national priorities and strategies for basic education in the wake of the Jomtien Conference and the Summit for children.

The World Summit for Social Development held in 1995 was another major occasion for world community to take stock of progress and constraints, to intensify the efforts to reach landmark social targets by the year 2000, and to maintain the momentum into the 21st century.

Much has been written on the conceptual side of linkages between development and society. There is a dialectical relationship between society and education: education is both the product of society and, in certain circumstances, a factor of social change. Viewed from the angle of socio-economic development, education is an historical entity, linked with different stages of this development. The objectives, contents, methods and scope of a system of education can be determined by the close examination of its relationship with society.

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It is clear that different forms of education resulted from different socio-economic systems or methods of production. The diverse types of society, whether patriarchal, slave-based namely, feudal, capitalist or socialist have systems of education which differ from each other in varying degrees. In traditional societies, the elders hand down to the younger generation all they need to know to ensure their livelihood and the continuity of their family, clan and tribe. Although the traditional society has no formal school, this does not mean that it has no education. In progressive societies, however, the rate of change and the growing complexity of production processes are such that education becomes institutionalized and the school becomes the symbol of a developing society. However, the main object of schooling is to acquire knowledge; it does not cover the whole of the educational process; family, physical surroundings and social environment; all continue to play a fundamental role.

In every society, the different forms of education, however, socialise and reproduce culture. The generation in power hands down a legacy of ideas and techniques to the rising generation. The educational system is strongly influenced by the past and the social context and tends to reproduce existing situations: Education, being a sub-system of society, necessarily reflects the main characteristics of that society. A society based on authority and injustice cannot be expected to produce a fair and liberal system of education. Schooling reinforces prevailing ideologies, whether dictated by the ruling class or inspired by recent independence or a successful revolution. Education thus helps to consolidate existing structures to form individuals for living in society as it is. Therefore, it does not mean this pejoratively, education is by nature conservative.

Investment in basic education is now regarded as a necessary complement to investment in all other sectors since no productive activity can realize maximum potential without a minimally educated work force. Besides primary education enriches peoples lives. Many would regard this as sufficient justification for universal primary education, independent of its other benefits.

The important role now being assigned to the education sector is consistent with the current emphasis on the provision of basic human needs as a development strategy. The new approach to the growth process focuses attention directly on improving the condition of life of poor people, in particular on their need for essential goods and services.
implementation of this strategy thus required identification of basic needs activities.

While there is no clear consensus on what needs should be considered "basic" education is everywhere regarded as one of the basic needs.

Approach to education places emphasis on basic education and the attainment of universal education, preferably for the whole duration of primary school.

Particularly important from this standpoint are expansion of opportunities for primary school age children, especially in less developed regions and for girls. Viewed from a broad perspective, basic education already becomes a vital need.

In quantitative terms it serves the largest percentage of the population and absorbs the largest proportion of money spent on formal education. In qualitative terms the elementary school provides education during the most critical and formative years.

Plight of Education in Pakistan

According to the recently published report on Human Development in South Asia, over two third of Pakistan's population is illiterate; 17 million children were out of school in 1995; one half of primary school children drop out before reaching grade 5 and the adult literacy rate is only 15 percent. In all, the country stands amongst those who have lowest literacy rate in the world. Public expenditure on education as a percentage of GNP is only 2.7 percent whereas it is 3.4 percent (average) in South Asia. The most devastating fact is revealed by the report on the plight of women, which says 77 percent of them are illiterate.

Basic Education has long been declared a priority for national development in official policy documents and in public pronouncements. The UNICEF'S 1996-1998 Basic Education Programme sets out to assist the Federal Ministry and provincial departments of education to improve the situation of primary education with a focus on access, equity, completion and quality.
Overview of Existing Situation in Education

UNICEF

Basic Education Programme as advocated by UNICEF contains the following strategies:

1) Focus on girls and women. Specially on female education.
2) Planning, monitoring and evaluation.
3) Community empowerment and partnership building between government and civil society.
4) National capacity building.

UNICEF has supported the governments efforts within the overall country goals for universalizing primary education, enactment of legislation for compulsory primary schooling, reducing rural and gender disparities, improving quality and broadening the resource base for financing of education. UNICEF is concerned about those systemic problems that stifle goal attainment. A key thrust of the UNICEF assistance is to attain and address major process constraints through strategies aimed at not only at goal attainment but also at assisting the government to revitalized the system and facilitating the process of achievements of goals.

The main objective of the 1996-1998 Government and UNICEF programme of cooperation in Basic Education is to attain primary level enrollment, completion and achievement, (especially for girls) through demonstration of a sustainable process of community empowerment and, enhancement of overall country capacity for equitable and efficient basic education services.

UNESCO

UNESCO has been a major partner in all educational drives undertaken in Pakistan. Its programme activities in Pakistan aims at expanding basic education improving the quality and relevance of basic education and reforms of education. The agency has contributed significantly in the following areas:
i. Supporting innovations, research and information in basic education.

ii. Developing Teaching Learning material for literacy and Post-Literacy programmes.

iii. Organizing dissemination and action oriented training workshops on Non-formal education.

iv. Strengthening professional inputs for promotion of basic education.

v. Funding research endeavors for literacy, Non-formal Primary education and other basic education programmes.

vi. Providing technical and financial support for implementation of literacy programmes. The country’s literacy Plan currently in operation was designed in collaboration with UNESCO.

vii. Creating and inter-provincial network for promotion of basic education.

Government of Pakistan

The National Educational Policies and five year plans of Pakistan have emphasized universalization of primary education at the earliest possible time. The programme aims at improving the relevance of curricula, reforming the examination system, expansion of technical and higher education, promotion of research particularly in science and technology at the universities and enhancing the quality of education in general. Despite substantial growth in the number of educational institutions, the desired goals could only be partially achieved due to rapid population growth and resource constraints. Due to ever increasing demand for quantitative expansion of educational facilities, adequate resources could not be spared for qualitative improvements. A large number of educational institutions were started without proper infrastructure. The condition of the existing educational infrastructure has deteriorated and dilapidated in the absence of proper maintenance. About 35,000 primary schools are without any shelter. More than 80 colleges and 150 vocational and commercial institutes are functioning in improvised buildings. A large number of schools lack essential facilities such as lavatories, potable water, teaching aids etc. The standard of education is far from satisfactory. The curricula lacks relevance. Methodologies of instruction and testing are outmoded. There are gender and rural-urban imbalances both in availability and quality of educational facilities. The dropout and failure rates, particularly at the terminal level, continue to be quite high. Participation of the private sector is much below the required
level. The management of the education system is centralized and without an effective system of accountability. It lacks active participation of the user communities and local bodies. The current Eighth Five Year Plan has focused on the following major aspects:

i) Universalizing access to primary education for all boys and girls of 5-9 years of age.

ii) Broadening of the resource base for financing of education through increased allocations and encouraging private sector's participation in provision of educational facilities at all levels.

Public sector programmes for increasing the literacy rate will rely mainly on universalization of compulsory primary education and encouraging NGOs for launching community based functional literacy programmes on the basis of demand, to be created through motivational campaigns and by linking literacy programmes with socio-economic development programmes of various sectors of the economy. As a result of this strategy, the literacy rate was targeted to increase from the existing level of 35% to 48% at the end of the eighth plan period.

Unfortunately the programmes designed for the spread of literacy have encountered a host of problems. These have lacked political commitment and effective participatory approach on part of communities as well as local NGOs.

The thrust areas traditionally have been adults who were deprived of formal literacy. This approach has proved to be an immense failure. The focus is now shifting towards the natural clients of basic education i.e. children aged 5-14. For this purpose a number of initiatives are on the anvil by the government in collaboration with international agencies.

Much has been written on the conceptual side of the linkages between development and society. There is a dialectical relationship between society and education: education is both the product of society and, in certain circumstances, a factor of social change. Seen from the angle of socio-economic development, education is an historical category, linked with the different stages of this development. The objectives,
content, methods and scope of a system of education can be determined by examination of its relationship with society.

Discussion on Some Key Concepts

The increased worldwide attention now being paid to Education For All presents a new opportunity and poses the challenge for broadening and deepening peoples participation, mobilization of the whole society and bringing authority and decision making closer to communities and families in each country in support of education goals.

The terms participation, mobilization and decentralization are widely used by the policy makers as well as educationists globally. For a better understanding of education, these terms need further elaboration. These three terms together constitute the key elements of a framework for promoting and assessing progress in educational development.

Participation

To participate literally means being part of something. But there are various ways and degrees of "being part of" or "taking part in": (1) use a particular service; (2) contribute resources, materials and/or labor; (3) attend; (4) be consulted on a particular issue; (5) get involved in the delivery of the service; (6) take part in the implementation of delegated powers; (7) take part in decision-making. On the other hand, it has been argued that "the participation issue is not so much a problem of degree or quality but rather of the quality off such participation" (Coraggio, 1991:218). It is also stressed that participation is "not only an agreement to follow but an active decision to assume responsibility in considering the rationale, implications and potential outcomes" of any particular process (Bernard, 1990, in Shaeffer, 1992, p.8). Participation, of understood as an empowering and formative experience, may enable people to: (a) gain knowledge, awareness and democratic experience, as well as self-confidence, self-reliance, pride and autonomy; (b) take action to solve their own problems; (c) gain control of their own lives; and (d) gain social and political power (Shaeffer, 1992).
In the context of basic education, therefore, participation is an expression of the overall development strategy of recognizing the critical role of people's collective action in the broad range of political, social and economic arenas.

Mobilization

Mobilization in the context of basic education refers to active involvement of all relevant sectors of society in promoting and supporting education. Social mobilization, therefore, is a manifestation of the principle of participation through organized and systematic actions.

Social mobilization is a broad-scale movement to engage large numbers of people in action for achieving a specific development goal through self-reliant efforts. It is a planned process that seeks to facilitate change and development. It takes into account the felt needs of the people, embraces the critical principle of community involvement, and seeks to empower individuals for action. (Ling and Hewett, 1992, p.1).

The term social mobilization reflects a sense of urgency about overcoming a common problem or achieving a common purpose through expression of collective commitment of society, formulation of strategies to achieve result, and engagement of large numbers of people in coordinated and goal-oriented group actions. The spread of participatory democratic values and new forms of social organization such as popular organization; professional associations; non-governmental and voluntary organizations; and elected bodies of local government, has created new opportunities for social mobilization. At the same time, advances in communication technology, electronic and print media as well as new and traditional forms of cultural reaching large audiences have expanded the potential reach of social mobilization to a degree unthinkable in the past.

Decentralization

Decentralization refers to the organization and structure of governance that make it possible for the participatory principle and its manifestation in action through social mobilization to be practiced. The dominant connotation is of a shift of authority and decision-making from the central government and capital city to regions, districts, towns and villages that would allow participation, facilitate mobilization and promote
efficiency. Along with the vertical shift to remedy over centralization of political and economic structures, a redefining of roles and functions of governance at different levels is also necessary. It is not a matter of divesting central authorities of their responsibilities and obligations, but assigning authorities and tasks at levels where they can be handled most effectively, conforming to the principles of participation and requirements for effective social mobilization. For decentralization to function effectively, national leaders, and the administrative and legislative organs of central governments, for example, must continue to define the overall objectives and priorities for education development, ensure that adequate national resources are mobilized for and directed to human priorities, determining board allocations of national resources among competing categories of needs promote principles of universality and equity for all the people, and foster a political culture including adoption of legislative and administrative measures for decentralization.

Decentralization can take three forms: de-concentration (passing down administrative functions with authority to review and over rule retained at the central level), delegation (passing down authority and decision-making powers with discretion to review and over rule retained at the central level) and devolution (granting decision-making powers to local authorities and allowing them to take full responsibility without referring back to central government with sharing of authority protected by legislative or statutory measures). In many developing countries, decentralization has not gone much beyond the de-concentration level. Decentralization also has a horizontal dimension, that is, the need to (re) distribute power among institutions at the same.

Speaking of decentralization in education means an attempt to restructure the education system with three main objectives: a) improving the finance efficiency and quality of the system, b) redistributing political power, and c) promoting stability in the system (Prawda, 1993).
Situation Analysis

In Pakistan, the concept of basic education is perceived in multiple ways. During 1951, literacy rate was claimed as 16.4%, population stood at 33,817,000 (say or approx. 34.0 million) and total food grains production was 59,56,000 (say 0.6 million) ton. During 1981, the literacy rate was 26.2% population increased to 84,254,000 (says 84.0 million) and total food grain production was hardly 16,319,000 (16.0 million) tons. In other words, literacy rate during 30 years just rose to 9.4% while the population growth and increase in food grain remained at 30.5%. This disparity in population growth and production was mainly accentuated by the lower rate of literacy. By the year 2000, the population is expected to be 150 million and crude activity rate (Proportion of labour force participation rate in the total population) would be staying at 28.83%. The interesting rather depressing part is that crude activity rate during 1951 stood at 30.70% and labour-employed by agriculture was 66% in 1997, it has decreased to 50.47% without an increase in the improved utilization of human resource.

Literacy has a direct relationship to development and since this important link was never equitably established, the country continues to move at a very slow pace towards growth. Four Educational Policies and same number of educational commissions in the past could not yield desired output because of non-implementation.

Literacy

General literacy ratio at present is around 40% of population which is 3rd lowest in the Asian countries. Despite repeated commitments in the Five Year Plans, the literacy rate could not be raised to the desired level. Literacy rates in the last four census are given in table-A.

Table A

<table>
<thead>
<tr>
<th>Literacy Rate</th>
<th>1951</th>
<th>1961</th>
<th>1972</th>
<th>1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>T</td>
<td>U</td>
<td>R</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>32</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>42</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>19</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Planning Commission
Plan-wise targets for literacy and the achievement for the last three Plans is given below:

**Table B**

<table>
<thead>
<tr>
<th></th>
<th>Fifth Plan</th>
<th>Sixth Plan</th>
<th>Seventh Plan</th>
<th>Eighth Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>%</strong></td>
<td>Target</td>
<td>Achievement</td>
<td>Target</td>
<td>Achievement</td>
</tr>
<tr>
<td>30</td>
<td>27.5</td>
<td>40</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>

Source: Planning Commission

Achievement of literacy target is contingent on two main factors – output of primary education and the efforts to improve literacy in the non-formal sector. Shortfalls in the achievements of literacy target is partly related to the shortfalls in the enrolment targets fixed for primary levels in various plans as given below:

**Table C**

<table>
<thead>
<tr>
<th>Plan</th>
<th>Target of Enrolment (000)</th>
<th>Achievement (000)</th>
<th>Achievement (In Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Fifth Plan</td>
<td>5904</td>
<td>2703</td>
<td>4608</td>
</tr>
<tr>
<td>Sixth Plan</td>
<td>7712</td>
<td>4642</td>
<td>6123</td>
</tr>
<tr>
<td>Seventh Plan</td>
<td>7951</td>
<td>5925</td>
<td>7792</td>
</tr>
<tr>
<td>Eighth Plan</td>
<td>9944</td>
<td>8018</td>
<td></td>
</tr>
</tbody>
</table>

Source: Planning Commission

**Treatment of Basic Education Under Five Year Plans**

The treatment of basic education plus literacy, is discussed in this part in chronological order.

**First Five Year Plan (1955-60)**

For the first time in 1952, a six year educational development plan was formulated in 1952 with the aim of achieving universal primary education by 1967. Since
required resources and methodology of implementation was not spelt out, the plan simply stayed on papers and then vanished with the passage of time. It was during 1955 when the first Five Year Plan (1955-60) was approved and Rs.576.70 million (5.28% of total plan size) were allocated to the education sector. The share of primary education was 20%. Due to non-existence of schools for girls, poverty of parents, a dull and dry syllabus, hardly 34% of the total allocation could be utilized.

Second Five Year Plan (1960-65)

The second Five Year Plan (1960-65) was formulated on the basis of recommendation made by the National Commission on Education instituted in 1959. Out of an allocation of Rs. 78.0 million was meant for primary education. This perhaps was the first plan in which 90% of targets were achieved. The enrolment increased from 2.06 million to 3.15 million. The highlight of this plan was that the recommendations of World Conference on Education for All were for the first time formally recognized.

Third Five Year Plan (1965-70)

The resource allocation for education in the Third Five Year Plan (1965-70) amounted to Rs.1152.0 million with Rs.200.0 million (17.4%) for primary education. This allocation was lesser than the Second Five Year Plan for the obvious reason of September War that caused severe financial constraints. During the plan period, second educational policy of 1970 was announced. During the plan period, second educational policy of 1970 was announced, emphasizing universal primary education during next ten years.

Fourth Five Year Plan (1972-78)

In the Fourth Five Year Plan (1972-78), for the first time specific financial allocation of Rs.35.0 million was earmarked for literacy programme. The Plan proposals included setting up Adult Literacy Advisory Councils and literacy centres both
at Federal as well as the Provincial levels. In addition, it was planned to institute a National Literacy Corps and have part

time intensive programme run by industrial units employing 200 or more workers. During this plan period third education

policy of 1972 was announced aiming at eradication of illiteracy through universalization of elementary education

and launching of a massive literacy programme by opening 276,000 literacy centres in the schools, farms, factories,

union councils and other community centres supplemented by a hard core of trained teachers. Community viewing

centres were also linked with literacy training.

Fifth Five Year Plan (1978-83)

The Fifth Five Year Plan (1978-83) delayed by three years, gave an added boost by making an enhanced allocation of

Rs.3069.0 million for education out of the total plan finances at Rs.10,698. Nearly 30% (Rs.1023) twice more than 4th

Plan was earmarked for primary education and literacy. Yet another education policy of 1979 was announced to

reemphasize universalization of primary education for boys by 1986-87 and for girls by 1992. The highlight of the plan was

the establishment of Literacy And Mass Education Commission (LAMEC) in 1981. This organization held a National Workshop on Female Literacy May in 1983, where the president announced ten point programme for the promotion of literacy. It was also during this period that a report to firm up literacy strategy, was compiled but had the same obvious fate.

Sixth Five Year Plan (1983-88)

The Sixth Five Year Plan (1983-88) had an allocation of Rs.7,000 million. Out of which Rs.750.0 million were made

available to cover 15.0 million illiterates (5 million males and 10 million females) of the age group of 10-19 year, under the

programme of functional literacy. As had been the practice in the past, the Plan was implemented for only two years

(1984-86) on experimental basis to set up 25,000 literacy centres in nine selected district. The programme was

ultimately abandoned and replaced by Nai Roshni Schools
for 1986-90 for providing condensed Primary course to 1.65 million Drops-out in age group 10-14 years at a planned cost of Rs.3153 million. Although the programmes took off with an ambitious approach but had to be scrapped off in 1988.

Seventh Five Year Plan (1988-93)

The 7th Five Year Plan (1988-93) again laid down high aims of achieving mass literacy by providing primary school to every child within a radius of 1-5 km. of a settlement of 500 persons or more. To supplement this literacy programme "Eradication of Illiteracy from selected Areas of Pakistan" and "Quranic Literacy Programmes" were also launched to achieve 70% literacy rate by the year 2000. The move was positive but in the absence of a massive literacy campaign involving all segments of society and all functionaries of State, the programme could not do much.

Eighth Five Year Plan (1993-98)

The Plan took off in 1993 emphasising universalising access to primary education for boys and girls of 5-9 years of age, legislation for compulsory primary schooling for all children, removing gender and rural urban imbalances, broadening of resource base for financing of education through increased allocations and encouraging private sector's participation in provision of educational facilities at all levels. It was targeted that Rs.5.528 million additional primary school (including 3-4 million for girls) will be established. The participation rate for boys at primary level was targeted to be increased from 53.7% to 87. During the Plan period, it was targeted that literacy rate will rely mainly on compulsory primary education and encouraging NGOs for launching community based functional literacy programmes. These programmes were to be linked to various socio-economic development programmes and decentralizing education at district level. Against the target of 48% literacy rate, the latest official figures are only below 40%. The Eighth Plan promised to increase enrolment rate in primary schools to 87 percent, (91.5% for boys and 81.6% for girls). The final evaluation of the Plan has yet to be published by the Planning.
Commission, but three years performance shows that results are not different from previous Plans.

Female Literacy and Education Through Non-Formal Sector

There is a growing consensus regarding the need for literacy and particularly female literacy; national policies alone do not appear to be enough. There are some countries including Pakistan where primary education has not been made compulsory, but at least 75 per cent of the countries in every region of the world do have some compulsory primary education policy. The challenge is not in developing policies to improve girls’ access to basic primary education, but rather in translating those policies into action.

How Concept of Non-formal Basic Education is Understood

The concept of basic education is understood very little in Pakistani society. In early 50s, it was dealt first under the adult literacy programmes, which yielded marginal results. During the 70s, the concept was more vigorously pursued but the results were not very encouraging. Although, every government has shown deep concern for illiteracy but none of the governments allowed the continuity of an on-going literacy project. The Literacy and Mass Education commission (LAMEC) was established and number of literacy programmes launched without any one being completed. This was the main cause for worsening of literacy situation.

All literacy programmes launched in past had conceptually been the same, except the difference in name. Some of them were:

i. Literacy Corps
ii. Literacy Centres
iii. Literacy Schools
iv. Iqra Pilot Project
v. Drop in Schools
vi. Nai Roshni Schools

All the above programmes had common concepts, common literacy training, common literacy material and common implementation strategy. None of the Programmes introduced any innovative idea or took stock of ground realities, cultural factors and social set-up. The primary
problem has been the absence of any institutional linkage between non-formal basic education programmes and formal primary school education. The other problem area is absence of distinction between literacy skill and education. The fact of the matter is that there exist no political commitment towards literacy. The leadership also needs counselling and guidance.

Policy Incentives for Private Sector and NGOs

During the 8th plan following policy actions were envisaged:

i) Steps are to be taken to devise a system of testing and recognition of the ability of students from private and NGO schools for their transfer/admission in Government schools at the terminal levels.

ii) Incentives in the form of provision of land at subsidized cost to non-profit educational institutions enrolling more than 500 to 1000 students, is imperative.

iii) In planning of all future housing schemes, both in public and private sector, provision of land for educational institutions will be made obligatory. A legislation will be enacted for this purpose.

iv) At present there is no effective mechanism for improvement and coordination of the NGOs performance. During 8th plan an effective mechanism was to be devised for this purpose.

Federal and provincial Education Foundations had advanced grants/loans to the NGOs for establishment of new educational institutions, particularly in the rural areas. The Education Foundations received grants from the Social Action Program for promotion of basic education and literacy through NGOs.

Despite all incentives and policies announced, there has been little improvement in the literacy rate as well as overall educational standard. The entire burden of education is being borne by the Government. Two main factors are responsible for discouraging improvements in the education sector.

i. Absence of community spirit and lack of motivation
ii. Expensive private sector schools

The first factor is mainly an outcome of inadequate NGO participation and lack of political commitment to education at local level. The second factor is commercialization of education, neglecting a vast majority of rural and lower middle class urban population.

Need for Basic Education

The perception of community towards need for basic education has a direct linkage with the success of non-formal basic education drives. Unless the community is made aware of the importance of literacy (as well as education) and its utility in practical life, the participation in any initiative is difficult. The concept of basic education is evaluated by the community under the dismal experience of formal primary education programmes. In Pakistan, across the board all the provinces, has a very discouraging experience of formal primary schools; their environment, teachers and above all the usefulness in the society. A common man fails to make a distinction between a person who had attended school for some time and a person who had never visited the school. The formal school training had not reflected any change in an individual's outlook, habits, mannerism, and general appearance.

This generates a glaring question; why should one attend a school, if it does not affect his personality and life at all? Under this experience and perception, the message of Non-formal basic education gains no ear. The basic education is introduced in the same way and same style as that of primary school education. The Non-formal education programmes like other formal primary school system continue to ignore;

i) The needs of rural communities
ii) Local factors
iii) Economic implications of joining a programme, (Sacrificing a specific amount promised every day, through participation of child in farm and farm related activities.
iv) Local requirements of community.

The above discussion shows that education or literacy both are regarded as less priority areas by a sizeable number of population. To them education is for rich or well connected people. For a poor farmer or a laborer education has no use.
Although most people expressed views in favour of education (both for male and female), but in practice their participation is very low.

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Artificial Intelligence

By

Muhammad Javed Iqbal*

CONCEPT

Artificial intelligence (AI) is the field of study which is concerned with the computational techniques for performing tasks that generally require intelligence when performed by humans. These include designing problems in automobiles, computers and people designing new computers, finding mathematical theorems, etc. It is technology of information processing concerned with process of reasoning, learning and perception.

To define AI is not an easy task. Actually, difficulty lies in defining intelligence as it is not itself well defined. There are a number of ways to define intelligence. It is not a single ability as recognized by Binet, but a number of related abilities which work together. Important aspects usually taken are: use of intuition, common judgement, creativity, goal directness, plausible reasoning, knowledge and beliefs. But, human intelligence is powerful, deep and limited. Limited in terms of knowledge base and information processing of serial nature which proceeds very slowly when compared with today's computers. Thus, meaning of intelligence is not the same as the "human brains information processing ability" intelligence is demonstrated by people through communication and learning. Belkin and Gray (1977, P.64) define intelligence as the capability to meet (or learn to meet) novel situations by new adaptive responses. In practice it is usually defined simply by listing topics considered to fall under this umbrella. These include understanding and translation of natural languages, understanding speech, vision system, theorem proving and playing chess. These relate to communication so AI methods are used to improve computer assisted learning.

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Almost all human activities require intelligence. The degree may vary over the past few decades, several computer systems have been developed which can diagnose disease, plan the synthesis of complex organic chemical compounds, solve different equations in symbolic form, write small computer programmes to meet formal specifications. It can be said that such system possess some degree of article intelligence. Artificial intelligence is the design and study of computer programmes that behave intelligently. AI is concerned with programmes that respond flexibly in situations that were not specifically anticipated by the programmer. Cognitive psychologist who are concerned with the research on AI, are interested in understanding how human beings think. They observe and study people in various problem solving situations and formulate theories and hypotheses at macro level (not at the level of neural connections) to explain observed behavior.

A.I has much in common with computer science disciplines. Anyhow, it differs from more conventional computer science areas in the following aspects:

1. View points (plausible and logical reasoning instead of quantitative calculation).
2. Subject matter (mental activity - very knowledge-intensive)
3. Tolerance for errors and imprecise data
4. Symbolic manipulation (instead of numeric orientation)
5. Evolutionary design principals (non-procedurally anticipating addition and change)
6. Knowledge based design
7. Inference and deduction capabilities (has a line of reasoning and can explain itself)
8. Heuristic or approximate problem solving approach (Schutzer, 1987, PP 4-5)

A.I. also attempts to understand how human beings think by studying the behaviour of machine designs and programmes that model current hypotheses and conjectures about some aspect of human cognitive process.
A.I is science as well as an art. Developing A.I system uses mathematical principles, empirical results of studying previous systems and heuristic, pragmatic programming techniques (Tonimotoz, 1987, p.6). In this, there is big room of creativity. Besides creativity, the most important purpose of artificial intelligence is to increase man's understanding of reasoning, learning and perceptual process. The development of new tools is important as well.

Traditional computer applications operate on two levels i.e. data and programmes. While focus of A.I is to combine:

1. Problem-solving ability of computers.
2. Alograthm power of decision models.
3. With the know how of experts
4. A self modification capability

HISTORICAL PERSPECTIVE

About 40 years back, life was simple but mechanical when in August 1958, article, DATAMATION reported that "------- some work which had been performed at Cornell Aeronatical Laboratory indicated that at last a machine operating on the principle of human brain appeared possible, at best as a laboratory model". This machine was called a perception and developed by research psychologist Frank Rosenblatt. At an early presentation Rosenblatt posed these questions:

Is it possible for a machine to have original ideas?

His answer was:
"With regard to perception, it appears that we must answer this question concerning original ideas in the affirmative". (Sanders, 1981, P.96)

The history of AI is divided by Forsyth (1990, P.41) as under:

<table>
<thead>
<tr>
<th>Decade</th>
<th>Label</th>
<th>Main Concern</th>
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<tr>
<td>1950</td>
<td>The Dark ages</td>
<td>Neural Networks</td>
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<tr>
<td>1960</td>
<td>The Age of Reason</td>
<td>Automated Logic</td>
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<td>1970</td>
<td>The Romantic Movement</td>
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<tr>
<td>1980</td>
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<td>1990</td>
<td>The Gothic Revival</td>
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The Dark Ages: Black boxes and Grey Matter

In this age computers were referred to as electronic brains. During this period, the central idea was that the way to make machines intelligent was to mimic the brain. The approach employed was bottom up. The assumption of this approach was that if we put together a large network of artificial neurons and subject it to an appropriate training schedule 'intelligent systems' can be developed.

The Age of Reason: Logic and Language

In 1960, it was clear that building brains is not possible. Now top down approach was adopted. Here computer was treated as information processor. This approach was successful with formal puzzles and games but could not solve open ended, ill structured problems.

The Romantic Movements: Knowledge as power

The key to this phase of AI was the abandonment of the goal of general intelligence. Observing that human experts are competent in their field by virtue of large body, specialist knowledge began to develop the first expert system. Expert system is caricature of the human expert, in the sense that it knows everything about almost nothing. Expert system is a software package that include:

(1) a stored base of knowledge in specialized area, and

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(2) the capability to probe this knowledge base in order to recommend solutions to specific problems" (Sanders, 1987 P-97)

Expert systems like MYCIN brought the motion of explicit representation of knowledge and its separation from inference process.

The Enlightenment: Learning How to learn

It was widely recognized that knowledge elicitation and codification is a difficult and labour-intensive so thought was focussed on automating of knowledge a acquisition process or at least assisting it by machine.

The Gothic Revival

In this counter reformation is under way within AI. According to Forsyth (1990, P-17) It is diversion away from the symbolic knowledge based paradigm towards matter computing or connectionism.

Artificial Intelligence Theory

AI is more than engineering discipline is also subject of scientific investing action. Researchers develop theories about what AI programs are capable of and test them with mathematical analysis or experiments. What adaptations are possible for systems that learn from experience? How can systems change in response to new information? What kind of training should a learning program receive? Scientists in AI are developing general computational theories to answer these questions. Theories are examined analytically, studies empirically much as psychologist might conduct experiment on human subjects. The behavior of complex AI is difficult to predict

AI researchers develop computational theories that begin with well defined computational goals and that provide information processing description of target behaviors in terms of inputs, outputs, and algorithms. Representation is central to such information processing descriptions. Representation is with the developing notations, establishing meaning of those notations, and using those notations to solve problems. (Dean, Allen and Aliomenos 1995, P-19) e.g computer aided design models.
The Mythology of AI

The mythology of AI, according to Partridge (1985, PP-58-60):

- Academic myth: Intellectualism is pack of intelligence.
- Reality of illustrated problems
- The need for environmental monitoring
- The need for non-printed knowledge-lots of it
- The spoke myth: an artificial will not be impeded by human weakness such as emotions and non-logical reasoning.

Some Applications of AI

1. Natural Language processing:

Study of natural language is an important area of AI. Main goals which motivated AI work are:

1. Theoretical goal: to discover how we use language to communicate.
2. Technological goal: to enable the intelligent computer interfaces of future, where natural language becomes an important means for man machine-interaction* (Dean, Allan and Aloimonos, 1995 P-489)

When we human beings communicate, we use language employ extremely complex but little understood process. A computer system capable of understanding a message in natural language requires both contextual knowledge and processing for making inferences assumed by the message generator. Few of the applications may be spelling and grammar checkers, spoken language control systems machine translation tools of automatic consulting systems. These systems provide us with expert conclusions about specialized subject areas. Automatic consulting system can diagnose evaluate potential organic chemicals and provide advise how to use other computer systems. (Nilson, 1980, P-4).

2. Intelligent Retrieval from databases

Database system is a computer system that store a large body of facts in such a way that they can be used to answer users questions about the subject. The design of database system is an active sub specialty of
computer science. There are many techniques through which active consulting systems representation, storage and retrieval of large number of facts is possible.

3. Expert Consulting Systems

AI methods are used in the development with bacterial deseases. The diagnosis of MYCIN is based on a set of decision rules. Thus computer diagnoses the problem from the information entered into the system by following logic of programmed rules. In CAI areas the expert module has the task of generating problems ad checking the student's solutions. Some expert systems can describe the decision step that led to a problem solution. This is useful when steps correspond to those of human problem-solver. For all this a system needs also (i) in dept knowledge (ii) Responsiveness (iii) Convenience

4. Teaching Module

This module communicate with the student, selects problem, monitor, criticize, assist when requested, and select or medial material. This communication is in natural language not in coded form. It embodies a variety of teaching methods and has access to student module.

5. Student Module

This represents the student's understanding of the material to be taught and is "crucial if the teaching module is to say the right thing". Woodhouse and MCDO vegall (1986, P-30). This can be represented as a subset of experts systems knowledge or deviation from it. Deviation makes it easy to recognize where students reasoning differs from that of system. The contents of this module are built up over time by asking the student question, and by making deductions based on his problem solving activities.

6. Expert Module

This contains the knowledge that the system is to impart. It was originally static data base but now it is a multidimensional network. An expert systems are programmed to ask users to supply information on a problem. The computer then processes the information and reaches conclusions normally requiring human experts. (Hussain and Hussain,
1989, P-307) MYCIN as indicated before is example developed by Stanford University which recommends drugs and treatment for patients.

7. Theorem proving

To prove or reject a theorem is an intellectual task. It needs deductive reasoning and initiative skills. The study of theorem proving is of great significant in the development of AI methods. Many informal tasks including medical diagnosing and information retrieval can be formalized as theorem proving problems.

8. Robotics

Research on robots or robotics is helpful in developing many AI ideas. An intelligent robot is capable of

- receiving high level communications
- understanding its environment through the use of models
- formulating plans
- executing plans
- monitoring its own operations (Schutzer, 1987 P-189)

Thus robots have to perceive its surroundings, navigate on Martian surface, respond to events as they occur, and take decision what to do next.

The key robots requirement as identified by Schutzer, 1987, P-194 for any robot programming system include capabilities for

- Sensing
- World modeling
- Motion specification
- Flow of control
- Appropriate programming support tools.

9. Automatic Programming:

Writing a computer programme is related with theorem proving and robotics. In a sense, existing compilers already do "automatic programming" They take in a complete source code specification of what a programme is to accomplish and write an object code programme to do it.
It was be taken as "super compiler" or a programme that could take a very high level description of what the programme is to accomplish and produce a programme. One of the important contribution of automatic programme is debugging as problem solving strategy.

Role of AI Practitioner

 Majority of AI engineers design expert system. They work with experts in medicine, corporate finance, education, etc to develop suitable representation or knowledge in the field. In addition to this, suitable displays and means of access are designed which are usually with capabilities particular to each application. This is not enough, AI practitioner keep work on making post installation changes to expert system. These changes may include addition of new changes, new technology needs to be incorporated. But at the same time, some practitioners study basic machine mechanics and problem solving.

Issues of AI

 Fundamental issues of AI involve:

 a) Knowledge representation
 b) Search
 c) Perception and inference

 Much of AI is concerned with the design and understanding of knowledge representation schemes. Search in key issue. Search techniques can help in avoiding the combination explosion. Inference is the process of creating explicit representational of knowledge from explicit ones.

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Internet-Assisted Learning

By

Dr. Mussarrat Anwar Sheikh

The Internet is simply a network of hundreds of thousands of computers all over the world. It is connected in a way that lets other computers access information on the... If a computer is connected with the Internet, in principle it can be connected with any other computer on the network. The Internet is thus causing changes in the way we normally use computers. Its size and usage is increasing day by day. It is estimated that there may be 150 million Internet users by the year 2000 (Galbreath, 1997). However, today, the Internet comprises more than 45000 regional, national and international networks, which connects more than 30 million people around 200 countries.

The fastest growing and the most versatile part of Internet is the World Wide Web (Web) which offers learners enormous opportunities for learning, including accessing information on formal education courses, and collecting a wealth of data and information on seemingly endless range of subjects.

Other growing and potentially educationally powerful, parts of the Internet are computer and video conferencing. Computer conferencing may be synchronous (all participants being on-line at the same time) or asynchronous, whereby the system archives all e-mail messages and display them to all participants, if and when they log onto the system. Video conferencing allows learners across the globe to see each other while they communicate. This experience is more invigorating than the communication through e-mail.

Internet-assisted learning has been suggested to have a very positive image. Pickering (1995) highlights the power of Internet in learning by arguing that the very nature of teaching changes. The teacher-dominated activity becomes a student-centred one, as more informal subject oriented groups emerge. The curriculum used formally

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will be replaced by a post-modern curriculum of the Internet catalogue. According to Pickering, it is a reflection of Illich's dream in his book the Deschooling Society:

*Each man (sic), at a given moment and at a minimum price, could identify himself to a computer with his address and telephone number, indicating the book, article, film or recording on which he seeks a partner for discussion. Within days he would receive by mail the list of others who had recently taken the same initiative. This list would enable him by telephone to arrange for a meeting with persons who initially would have known exclusively by the fact that they requested the dialogue about the same subject. (Illich 1971, p.26)*

Pickering says that instead of essays, learners will present their own writings in the hypertext in interactive form coupled with images, sounds and annotated links. His contention is that this will surely change the very culture of textual education, which has been dominating the Western world for centuries. While it is not clear and certain from Pickering's work, but it does indicate that the informality and learner dominated learning is in itself in conformity with the life long learning concept. In spite of this formal mode of internet delivered education, the fact about teacher control and the persistence of this role cannot be ruled out. The e-mail forum which seems democratically interactive is dominated by tutors rather than students. This is the reason why some users keep a withdrawn position during computer conferences as the interactions are dominated by the academic tutors. This places an added responsibility on the educators to find an appropriate model of tutor-student interaction mediated by interactive communication technology.

While Internet is potential for delivering new modes of learning, vested interests including those of the institutions of Higher education must ensure that it occurs under their control and jurisdiction.

One of the main tools of Web is the hypertext. It is assumed that it is suited to all learners as it certainly provides flexibility. However, a study conducted by Shroeder with 113 college undergraduates (1994) casts doubt on the value of hypertext for all learners. He found that users of hypertext require extended practice and experience with the system to
become comfortable and proficient in using it otherwise they will feel lost in hyperspace:

In general, the use of this hypertext system was not intuitive for first time users. Students not used to this degree of learner control often felt lost and confused. Many had trouble developing a viable strategy for moving through and organizing the information (Shroeder, 1994 p.817)

It is assumed that college students have more exposure and contact with the computers than those who have had limited formal education. If the college students experience such problems then the adults or lifelong learners may not be able to cope well and face endless problems.

The Internet may have an abundance of information, but it still lacks the actual learning materials. A Web site visit to a formal education institution shows the historical background of the institution, the structure, the staff and courses available. This is commendable information made available to you on your desktop, but the actual learning materials are missing. So, what is needed is how the web can be used to deliver the learning materials and packages. One of the difficulties is the availability of the learning material and the difficulties faced in accessing the material due to the limitations faced in the technology. Currently, the problem is that ebandwidths are narrow and if files are large with graphics etc. then downloading is a problem. More than often when there is traffic, it is impossible to gain access to the desired Web site. This downloading in such situations becomes slow or totally inaccessible. Another disadvantages of putting the Internet on Web is the security. Since most of the formal education institutions are businesses, they control the access to their education sites through password security.

The Internet as an information source is supposed to be accessible, but it has been noticed that the Web is fast moving away from the zero cost data bank and is not as bountiful as it was first supposed to be. As such some sites containing information of potential commercial value are increasingly closed and offered only on subscription basis. Similarly, educational institutions are also providing open access to the marketing parts of their Web sites giving details on their courses and their offering. However courses are provided either internally via an Internet or externally on fee paying basis only. As an educational information base it has its
drawback as much of the information is not reviewed and its authenticity cannot be substantiated and learners need to treat all they see on the Internet with caution.

Pickering (1995) concedes that the vast majority of the Internet users are well educated. Internet skills represent a highly localized monopoly and seem to be increasing the gap between those who benefit from IT and those who do not both within and across the cultures. In a study carried out with 6700 adults in Sweden (Borgstorm, 1985) it was found that greatest gains were made from those in the upper classes. Pickering (1995) concedes that the needs of the developing countries are far better met by providing school buildings with libraries than by a few expensive Internet modes. Internet has had a dramatic impact on the world of researchers and scientists. For its similar impact on education there needs to be an enormous jump in accessibility and affordability. Furthermore, there seems to be gender disparity in the Internet users as Banbury (1996) reports that only 10% of internet users are women. If Internet is liberating, then it should not be liberation for a few. It should be liberating with out race, color, creed and gender

The pedagogical deficiencies in the various modes of the information technology cannot be replaced by the face-to-face interaction between human beings. Rogers personal relationship (1969) Maslow’s (1943) hierarchy of needs of love and belonging cannot be met by the Internet when the teacher cannot be seen. Except for the video conferencing, the non-verbal communication is missing.

It is because of these difficulties that Kimbel has recommended (1995, p.54-56) a number of basic practical ideas for making on-line groups to work effectively. She has specifically mentioned the roles of tutors and students and given guidelines as to how the tutor should set the tone through the fist message by stating that the atmosphere should be supportive, fast moving, reflective, focussed, unfocussed. The tutor should try to nurture and nourish the conversation by adding new material, questions, messages and case studies. The tutor should provide feedback by encouraging the students to send good messages and acknowledge them.

The Internet is definitely a tool of enormous potential and will become increasingly used in the education process as a means of communicating when new technical improvement such as digital
technology and wider bandwidths allow the transmission of video. This will help millions of people in the educational institutions worldwide with conducting of discussions, exchanging ideas and for the delivery of information. It is also penetrating into people’s homes. The facilities and capabilities there are some disadvantages which need to be addressed. There is a dire need to make the technology user-friendly for the majority of the people through prudent use of software and careful production of modules by the educationists so that technology can be used to enable the learners rather than alienate them.

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Mainstreaming: A Model for Special Children in Pakistan

By

M.Mahmood Hussain Awan*

"Everyone has the right to education", states the Universal Declaration of Human Rights (1948), cited in the National Education Policy (1998-2010, P.25). This fundamental right has been recognized in the Convention on the Right of the Child (1989) stressing that the child has a right to education and the state's duty is to ensure that primary education is free and compulsory*. The National Education Policy (1998, P.1) further indicates: "The Ideology of Pakistan lays down two important obligation on the government. Firstly, education will be accessible to all citizens. Secondly, it shall enable them to prepare enlightened and civilized individuals committed to the cause of Islam. These obligations are in accordance with the teaching of the Holy Quran, that recognizes provision of education as a right of the individual", and the mandate has extended to include the disabled as well.

It has been estimated that about 4.3 million (40 Lacs) children, aged 5-14, who require some form of special education and 1.43 million (14 Lac) young people upto the age of 20, who need further education, training and employment opportunities" (National Task Force on Education, GOP. 1997, PP.2,3).

The magnitude of the problem invites our attention to the fact that we cannot afford to ignore such a large number of our population which could be trained through special provisions and prove an asset rather than continue as a liability for the nation.

It is encouraging that the public and private sector played significant role in the development of special education for the welfare of handicapped in Pakistan during the Decade of Disabled (1983-92). As

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projected in the Directory of Special Education and Welfare Services for Disabled Person (1994, p.177), there were 282 centre's catering education and other services to 18524 children with 1981 teachers". As concluded by Hunzai (1993-P.99), "there is still a big gap between demand and supply of special education in Pakistan. The existing services are infact so limited that practicably it does not give coverage to even 1% of the estimated disabled children population. Realizing the situation Laeeq (1994-, P 1) proposes: "A developing country like Pakistan cannot possibly bear the expenditure of providing special education schools and centers, particularly for children belonging to the rural population and small towns. Integration or mainstreaming is the proper solution if the aim to universalize primary education is to be achieved by the year 2000". The National Policy for the education and rehabilitation of the disabled (1988, P.11) also recommends: "It must be recognized that integrated placement for any child is a means to achieving a desirable educational goals". It further proposes:

"All special education centers must establish closed links with local ordinary schools in order to create opportunities for disabled pupils to integrate for social and academic activities on a planned basis including the necessary professional support."

In Pakistan, most of the handicapped children do not receive appropriate educational services due to constraints, like shortage of personnel, finance and basic physical infrastructure. This lack of basic facilities demand, teaching special children in regular school system that is mainstreaming the special child.

Although some efforts have been made in this regard, but a lot is to be done to promote appropriate educational access to majority of special children, but the government only could not succeed without commitment and support from the community. Realizing commitment to the principle that all individuals are created equal and deserve to enjoy equal opportunities of education and freedom it looks appropriate to move away from traditional methods based on isolated sinks for educating special children and propose a suitable model of inclusive education in Pakistan on the basis of work done in developed and developing countries.

Within the past few decades, the education for children with special needs has gone through a number of changes in developing & developed countries. Thrust of knowledge and research regarding styles of learning,
needs of learners, computer technology, identification and introduction of novel instructional alternatives, teaching resources, development in medicines, genetics, the more sophisticated rehabilitation engineering, intervention strategies and psychosocial development have accelerated the process of amelioration of special children. This wave of reforms lead to restructuring the existing education system to fit the perceived needs of universal and more inclusive educational arrangements for handicapped children. The efforts of moving from an excluded to an included identity in educational terms are named as deinstitutionalization, integration, normalization mainstreaming, least restrictive environment and inclusive education. The report of Pakistan delegation (1986, P.38) noted the principal of educating handicapped and non handicapped children together is named as 'mainstreaming' in the United States of America, 'integration' in the United Kingdom and 'normalization' in Scandinavia and Canada. However, mainstreaming refers to the inclusion of special students in the general educational process". Hegarty et-al (1988, P.11) conceptualize integration as "it refers to the education of pupils with special needs in ordinary schools". Spodek et-al 1983,P.61) describing aims of integration say "handicapped children should have the opportunity to participate in as many of the same activities and should be educated in the same manner as their non-handicapped peers to the largest extent possible". The Warnock Report (1978, P.100) proposes three levels of integration:

a. **Locational integration:** where special units are set up in ordinary schools. Where a special school and an ordinary school share the same site.

b. **Social integration:** where children attending a special class or unit eat, play and consort with other children and possibly share organized out-of-classroom activities with them.

c. **Functional integration:** where the Locational and social association of children with special needs with their fellows leads to joint participation in educational programmes.

However, the integration of special students into the mainstream of education differ according to needs of individual and condition of disability. Severe disability may prevent an individual from full participation in all regular activities of the regular school system. Kaufman et-al (1975-P.5)) define mainstreaming as "temporal, instructional, and social integration of eligible exceptional children with normal peers based on an ongoing, individually determined, educational planning programming process, and
requires clarification of responsibilities among regular and special education administrative, instructional and supportive personnel". Gearheart et-al (1988, P.5) visualize mainstreaming as "maximum integration in the regular class combined with concrete assistance for the regular class teacher"; whereas Lewis and Doorlag, (1995, P.5) review inclusion as a term to describe the mainstreaming process. The process which emphasizes full-time mainstreaming of students who have identified special education needs and ensure students' natural participation as a regular member of the class. Thus as quoted by Heward (1999, P.70) "There is no clear consensuses in the field about the meaning of inclusion (Kauffman & Hallalan, 1995)". To some, inclusion means full-time placement of all students with disabilities into regular classroom; to others, the term refers to any degree of integration into the mainstream. Heward (1999, P.77) concludes "inclusive education is a set of values, principles and practices that seeks more effective and meaningful education for all students, regardless of whether they have exceptionality labels or not".

Just to avoid too much involvement of readers in terminology or definitions, writer chose "mainstreaming" as the most functional operative term and proposes a mainstream model for Pakistan.

It is not necessary to blindly accept and follow this model; one must attempt to look into it on rational grounds according to situation as we know special needs vary from child to child in nature, and severity of condition. Moreover, just placing a handicapped child in mainstreaming does not mean that the desired changes in behavior of child and social acceptance will be there automatically. There are factors like teachers competencies, institutional environment, family support and physical facilities, also need to be considered before a final decision on placement in mainstreaming is proposed. The major components of mainstreaming are briefly described here.

A. Mainstreaming Team

Educating young children is a collaborative will of every society. To accomplish this goal collective efforts for development of curriculum, selection of instructional material evaluation of educational programmes and improvement of various aspects of the educational system are undertaken by a team of professionals. Like wise, the most fundamental step in mainstreaming is the establishment of a mainstreaming team, who initiate, facilitate,
supervise and evaluate mainstreaming programme and makes important decision for education of special students. Such teams are named as intervention assistance team, child study team, evaluation team. These teams "placement committee", Special services committee, school appraisal team mostly comprise special education administrator, or coordinator or supervisor, educationists, (regular & special) medical officers, educational psychologists related professional support staff, resource teacher and social case worker. The parents of the students and administrative of the school serve as resources to the team and mostly depend on judgements and opinions of the professional and other team members. All team members work together to provide the best possible education for exceptional children.

Special education is a multi-disciplinary process. Each step of special education, therefore, emphasis on coordination, cooperation and consultation among the team members which provide a form for full success of mainstreaming. The most operative three models of such teams are multi-disciplinary, inter disciplinary and trans disciplinary teams.

Multi-disciplinary team is composed of professional from various disciplines; inter disciplinary team is described by formal channels of communication between members responsible for conducting a portion of the support services related to his area; whereas trans disciplinary team comprises the professional across discipline boundaries and propose discipline free goals and intervention strategies. The main purpose of teaming is to provide from education program for a student having SEN by mutual sharing of expertise and information to develop effective strategies and solutions. The main function of these teams may be described as:

a. to determine eligibility of a student for special education services on basis of Special needs of the student and the family.

b. to plan, implement, monitor and evaluate the student's Individualized Education Programme (IEP)

c. to evaluate the outcomes regularly to assist teachers to minimize problems in the regular classroom or propose modifications, if necessary before referrals are made to special education or other type of special services.
d. to determine effectiveness and composition of team to make any modification in special assistance operating procedures depending on individuals severity of problem.

e. to work as a bridge between general and special education personnel to effectively conduct their shared responsibilities and expertise to meet SEN of students.

f. to establish and maintain collaboration of parents, teacher and other professionals.

B. Assessment

The Second Important step of mainstreaming is assessment. We know the special education decision making process demands careful and complete consideration of the student's special needs. By carefully examining students' development and aptitude, the skills and attitudes of the teacher and family, and the environments that impede on the individual, one may enrich his insights towards the causes and predict arrangements for better future outcomes.

Assessment, in simple words, may be the procedure or a framework for identifying student's learning characteristics and procedure to access continuum of educational services based on their individual needs. The continuum of services as defined by Heward (1999, P.66) --- is a range of placement & services options to meet the individual needs of students with disabilities. The continuum is often symbolically depicted as pyramid, with placements ranging from regular classroom placement at the bottom to special and residential programs at the top". It further includes special education procedures of referral, placement and monitoring and evaluation of students' progress.

The assessment or reassessment (in case of special child) should be undertaken as early in the school year as possible by employing all school approach and the information thus collected be reported to child's teacher and specialists inside or outside the school or may be referred to multidisciplinary team with parent's consultation. Alongwith SEN the student's attitude to learning and school, his abilities, actual knowledge, skills understanding and performance level may also be checked.
Careful assessment is an important component to know what matters to the particular student which he or she is exposed to; or to find out relationship between assessment and instructional planning.

i) It should be an overall identification of individual's physical, cognitive, social, emotional development and performance level based on observation, interview, school record and tests;

ii) characteristics and needs of individual which include records of attainments, abilities, achievements, placement (class setting) and behavior;

iii) assessment must help to form the list of expected outcomes;

iv) it involves looking a child from overall performance levels;

v) students placement according to his/her needs and provision and resources to overcome problem or fulfill that particular need;

vi) financial resources and their allocation;

vii) involvement of parents and other professionals;

viii) how child perform relative to his/her peer group;

ix) the effectiveness of materials methods, staff, environment and organization in the view of a particular need;

x) the evaluation procedure to know the effectiveness of the proposed strategies, and

xi) the responsibilities of every member of the team.

Individualized Education Programme

The next step for mainstreaming is the guidelines for all involved in the form of Individualized Education Program (IEP). The individualized education programme (IEP) plays a pivotal role in the special education process. It is the written educational programming for students with special needs in their classroom. Lewis and Doorlag (1995, P.7) define it as: "The educational plan devised by the mainstreaming team is called the individualized education programme. It is a written plan agreed upon by a team that includes the students’ parents and often the student".

IEP emphasis on individuals' need and specifies precise adequate assessment, acceptable appropriate placement in most conducive environment. Parental, professional and other support staff involvement, equipment either media or material, child's present level of performance, objectives (general & instructional) to be achieved within time frame,
implementation team's responsibilities and its proper performances, evaluation procedure and justification of the type and provisions proposed for placement.

Lowis & Doorlag (1995, P.17) argue that "Placement in the mainstream is considered optimal for students' with disabilities if they are capable of coping with regular class demands". Therefore, The each part of IEP must be given alum. Consideration, Pasenella and Volkmor (1981, P.165) present following seven components of an IEP:

i) Present performance levels
ii) Annual goals
iii) Short-term objectives and appropriate criteria
iv) Specific special education and related services
v) Projected dates for initiation and anticipated duration of services.
vi) Extent of participation in regular education.
vii) Evaluation procedures and schedule for an annual review of the IEP.

As discussed earlier, implementation of IEP is the responsibility of implementation team. They are responsible to align ongoing classroom instruction with proposed goals & objectives stated on IEP. For this purpose individual implementation plan is developed. This plan describes time frame for specific instructional events in the classroom on daily basis. Learning steps, educational strategies, instructional techniques materials, resources and progress measuring procedure.

i) Training of Personnel

A comprehensive overview of services existing and expected for mainstreaming would be necessary. Particular attention must be given to professional training of personnel which includes guidance on how to meet the desirable outcomes? How can they help children with special needs become active learners? How they ensure that the activities and support offered to young children will promote learning environment. This all require a comprehensive and up to the mark professional training and retraining of members of mainstreaming team. Such training will assist the personnel's working of their own. The basic understanding of management and leadership, selection of suitable interventions and instructional strategies, projecting and maintains a positive image for
children and other colleagues, analization of behavior modification techniques, and apart from the above several related trends are emerging in the education of special children. Therefore the special personnel without the accompanying skills may not respond affectively to the needs of special students in regular school system. Training of both special and regular educators must be obligatory and be organized on priority.

II) Equipment and Other Provisions

In a broader sense, the equipment includes both the modern and traditional technologies which facilitate the teaching learning process. The special teachers need to have a variety of this equipment. It includes communication visual, auditory and multisensory. Some gadgets help moving etc. It is important, however, to know the proper use of such equipment. A skillful teacher may select most appropriate equipment during his teaching to increase his professional productivity. The availability of equipment needed for mainstream students must be insured. Moreover provisions like resource room remedial teaching room or instructional material Centre, informational support Centre for families regarding services and programmes for special children. Such provisions are necessary for specialized instructions to the students.

iii) Legislation

Legislation provides concrete structure and strength for development and improvement of any movement. It explains the legal framework, need for organization, its structural components, their responsibilities, the beneficiaries and their needs, provisions with framework, finances showing allocations, expenditure and sources.

The Proposed Mainstreaming Model for Pakistan

Perhaps this would not be the first mainstreaming model to be presented in this country, some modest beginnings have already been there and operating for the well being of handicapped children in our country. However, there is always a room for improvements and additions or to propose deletions as well. It is not possible to introduce mainstreaming throughout the country without careful survey of the existing set up of special institutions which is operating successfully in many respects. Some of the pre-requisites of mainstreaming have been discussed in previous pages. In the light of these conditions this model
may be introduced as a pilot programme in Islamabad first and then be replicated for the remaining suitable geographical locations in other areas of the country including urban rural male and female institutions. The capital territory Islamabad is proposed because of the following reasons:

i. There are four principal working in Federal Government Education Institutions (FGEI) who have done their M.Ed in Special Education from Allama Iqbal Open University (AIOU).

ii. There are 20 senior teachers working in FGEI who have completed M.A./M.Ed, and Post Graduate Diploma in Special Education from AIOU and 20 are in the pipeline who will hopefully complete the degree by the end of this year.

iii. All of the above personnel are aware about the special educational needs of children and willing to accommodate and help special children.

iv. The principals, senior teachers working in special education institutions of Islamabad and Rawalpindi have developed reasonable understanding with the teachers mentioned above because they are classmates being IQBALIAN and the teachers working in regular school system enrolled for Master Degree in Special Education performed their one month teaching practice in special institutions of Rawalpindi and Islamabad.

v. There is hardly a much distance in regular schools and special school if mainstreaming is conceived sector wise which may not cause any extra financial burden on parents and organization as well.

vi. Administration of both the institutions is based locally at Islamabad. The Director Planning & Development of FDE is also M.Ed in Special Education. He may be helpful for such liaison.

vii. National Institute for Handicapped (NIH) is nicely catering for the well being of handicapped. Al Shifa International and Pakistan Institute of Medical Sciences are also sharing such responsibilities for rehabilitation of handicapped. Thus, the medical support madly be explored from them.

viii. The Department of Psychology of Quaid-i-Azam University, National Institute for special Education (NISE) and
Department of Education AIOU may extend their professional support. The experts from NGOs working for special children may also contribute.

There might be more possibilities of involvement than the above mentioned which would become to shoulder their responsibility once the anchor is pulled.

A team of professionals may be formed to work as assessment team for placement of exceptional children in mainstreaming. This team's network by joint planning with service users, their representatives other involved may propose a pathway through which clear, widely accepted principles for support and care are transmitted. Experiences suggest difficulties often arise when any revolutionary step is introduced but the success is always the product of hard-won battles against the prejudice and monotonous behavior. No doubt, such struggles are hard for others to ignore. Therefore, the initiating team must have courage and should prepare to work with enthusiasm without giving much attention to any negative attitude but they must appreciate the criticism of well wishers.

In mainstreaming education, health, social care services become more responsible and accountable. It should be necessary to know who will decide and by what means. Collaboration depends on understanding and trust and trust on abilities of every member promotes conducive working atmosphere. Self confidence is shaped by how others acts towards us. Thus, the determination of objective should be prime binding factor among the team members.

In regular school there should be a coordinator. He may be the administrator of the school but it would be better to assign this responsibility to class teacher. He will report for help to the special teacher if needed. Remedial teaching or behavior problem be helped out by professional support. The IEP be prepared by the team and necessary inclusion or deletion may also be proposed by the team. Evaluation of inclusive educational developments carefully be recorded by the coordinator. He must immediately reinforce the positive changes to promote high standard performance. Special children largely depend on close family members, parents, siblings as well as on friends and in rare cases on neighbors and distant relatives in extending negotiations with community. It is important to give due consideration to such a close person for establishing any opinion or developing IEP. His positive
involvement will surely facilitate the work of the team in case of procurement and coping resources, screening or referral to any formal service. The placement by the team must be based on child special needs if the area of academics, classroom behavior, and social performance. The regular class teacher is helped by the special teacher to develop skills needed for interventions. It is duty of the team to select meaningful tasks for the learner keeping in view the situation and level of the regular class.

The class-room teacher must have the skill to manage his time. His objectives must be precised and according to the priority of instructional learning events. The equipment and material which he uses must be according to adaptations for special children keeping in view their special needs. There are several approaches to teaching and instructional styles which teacher uses in the class. He must adopt most suitable strategies which may be facilitative to educate special children.

In some cases, full time integration is not recommended. Such students are recommended for part-time placement in regular class and partly placed in resource room or special classes. The mainstreaming team also meets to design the special services for such children.

Evaluation is the most important indicator to find out strengths and weaknesses of any system. It provides information to make aware and to take rational decision about any system or programme. Without careful evaluation of any organization it may not be possible to achieve its conceived objectives. The evaluation either formative or summative of student, institution, personnel and process, it helps to check the directions of a programme by analyzing input and output to decide revision or continuity of a programme. In mainstreaming formative evaluation is undertaken for the improvement, development and reorganization of the ongoing activity, its psychological and social impact on individual. In its summative functions it looks at the whole programme of mainstreaming; the input and output regarding conceived objectives. The efficient and meaningful evaluation exposes the degree of success and failure if any, and proposes future plan of action by minimizing or correcting mistakes to control wastage of manpower, efforts, and financial resources. Critical analysis of every step from development of IEP, responsibilities of each member involved, management structure, intervention strategies and environmental factors may facilitate the success of the success of the mainstreaming programme.

No doubt, mainstreaming is the best way to teach students with
special needs but it may not meet a success if careful planning, team work
and coordination among the team member for the planned and systematic
monitoring of arrangements of physical settings, special equipment and
materials, teaching procedure and the other interventions designed to help
the mainstreamed child is not made.

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GRAPHIC PRESENTATION OF MAINSTREAMING PROGRAMME

Formation of mainstreaming team

Parents

Teachers

Teacher

Regular Teacher

Resource Teacher

Medical Staff

Related Professional Staff

Parents and school teachers as resource to the team

Co-ordinator of the program

Identify students with special needs

Physical needs

Academic needs

Classroom behavior needs

Social needs

Assess special needs

Strengths

Weaknesses

Present level of performance

Provision of trained staff

Plan educational programme

Provision of required equipment

Short term objectives

long term goals

Specify the date (begin-complete)

evaluation

Specify the date

Process evaluation

Trial testing continue/revise the programme

Specify the date

Evaluation

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Higher Agricultural Education Through Distance Teaching System

By

Dr. Shabbir Ahmad*

Abstract

The quality of university education, in general, and agriculture, in particular, is not fulfilling the needs of the nation. Some of the shortcomings prevailing in agricultural universities of Pakistan can be overcome by supplementing the formal system of education by Distance Teaching System at post-graduate level. The Distance teaching system aims at enhancing the knowledge and skill of the professionals already working in different organisations who cannot leave their homes and jobs.

Introduction

Education is a continuous and life long process. It is the most effective tool of creating a highly productive manpower. People without education are at the mercy of those who are around it, who can use what they know to impress, and often exploit the ignorant around them. Education aims at inducing general attitudes of logical thought and broadmindedness. Education for children, technicians, businessmen, peasants, and people of all walks of life helps in improving behavioural and cultural faculties in order to achieve a particular end.

Education has been considered as the best investment by a nation especially in economically deprived and so called under-developed countries. One undisputed characteristic of the technologically advanced and so called developed countries is their high rate of literacy and

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provision of high quality education to a large proportion of their population. Pakistan, like most other so-called developing countries, has made considerable efforts to improve the literacy rate and to extend higher education in the country. However, while improving the literacy rate is an important factor in the overall development of a country, the contribution of higher education to the economic and human development depends on the quality of education imparted and not on the number of persons holding degrees from colleges and universities. Therefore, defining the goals of education and attributes of education is essential if a country is to achieve the desired results (Asianics, 1992 a).

The population and requirements for agricultural commodities are growing, the natural resources also being used for non-agricultural purposes. To meet the requirements of a rapidly growing population, the productivity of the agricultural sector needs to be maintained at the highest possible level. There are growing concerns among politicians, planners, the farming community, and agricultural researchers that the gains of the past 50 years cannot be sustained unless substantial efforts are made to ensure all that has been achieved in the recent past as well as the outcome of current and planned agricultural research are systematically transferred to the agricultural practitioners at all levels. Agricultural productivity will have to be increased significantly during the next 20-30 years to meet the country's basic needs. However, a careful analysis of the agricultural potential of available natural resources suggests that production targets can be met provided manpower capabilities are efficiently developed and organised on scientific lines.

This would require corps of agricultural scientists who can professionally undertake research, extension, policy making and management responsibilities. Agricultural education will play a critical role in this endeavour (Asianics, 1992).

For agricultural development in the country, strong linkages amongst institution buildings, human resource developments, and technology transfer are very important. The technology transfer, being a continuous process, cannot possibly take place in a vacuum. It needs to be done in a well-organised system of agricultural extension where role of the scientist, the extension agent, and the farmer are all too important. The scientist must develop better yielding varieties and breeds of crops and animals, the extension agent must, on his part, equip himself with better and effective methods to convince the farmer of the product's
utilitarian importance. Once convinced, the farmer will certainly adopt innovations for his own economic betterment.

Agricultural education plays a critical role in the promotion of a sustainable agricultural production system. Agricultural education must equip graduates with the ability to communicate with rural communities at their level besides generating and transferring innovations. Agricultural graduates must have at least a basic knowledge of biological and socio-economic aspects of national and international agriculture and they must be aware of environmental problems, and should also be well versed in system management and communication skills.

History of the gone age shows that only those nations who paid attention to improving their quality of education—have succeeded in bringing about an overall economic development and reducing poverty. This is especially so in the case of agricultural education since all efforts to bring about radical improvements in the agriculture sector will depend on the quality and relevance of education imparted to students in agricultural colleges and universities.

The higher agricultural education in Pakistan from formal agricultural universities is not satisfying the needs of the country. The standard of agricultural education from agricultural universities and the relevance of the current curricula to the prevailing agricultural situation are, by and large, unsatisfactory. Referring to the standard of the University of Agriculture, Faisalabad, the Punjab Public Service Commission, which is the main agency in the province for recruitment of agricultural graduates for different provincial organizations, in its report of 1990 stated that:

"The standard of the University of Agriculture, Faisalabad is indeed disappointing. The graduates of the University appear to be ignorant of agriculture as a practical discipline. There is no meaningful equivalent of "House Job" as in medicine. The laboratory work also leaves much to be desired. Funds for practical and lab work are at the scale of rupees ten per student, which is as good as nothing."

"General knowledge of most of the candidates was rather poor; they displayed lack of reading habits and comprehension of day to day problems in a logical manner."
They do not read even newspapers regularly or intelligently. The candidates admitted to have rarely gone to the library to consult any journal, periodical or other material on the current development in their fields of specialisation and so on. “The Knowledge of the candidates in the field of specialisation was equally poor. It appears that deterioration has occurred in all branches of education in our society.”

Causes of Deterioration of Higher Agricultural Education in Pakistan

The quality of University education, in general, and agriculture, in particular, has deteriorated and is not fulfilling the needs of the nation. Curricula are outdated and have not been significantly revised. Curricula and courses of the Agricultural Universities are focused on a single discipline while the agricultural needs of Pakistan are inter-disciplinary. There are many other causes for this deterioration. Some of the important factors responsible for deterioration in education in Agriculture Universities are as under:

1- Political interference in the universities especially in the matters regarding appointments of the vice chancellors, faculty members and administrative staff.

2- Involvement of the students in active politics creating unrest, in-discipline, agitation and disruptive protests.

3- Lack of coordination among the various agricultural Universities, on the one hand, and institutes of research and extension, on the other. Agricultural education can be meaningful only if it is closely linked to research, extension, and actual farm practice. The principle of close interaction of research, education, extension and farmer is valid under most farming situations. Research should solve practical problems of agriculture in the field and generate new information that can make agriculture more remunerative and sustainable. The new knowledge generated by research should be regularly incorporated in syllabi and disseminated to farmers through extension service.
4- Lack of opportunities of on-the-job training for teachers to update professional knowledge.

5- Inadequate financial support for education, including research and extension. As a result, students and faculty do not engage in applied research and have no opportunity to interact with farmers, or share responsibility to solve farmer’s problems.

6- Lack of research facilities and a low priority given to research output by the faculty as a criterion for career development. There is an urgent need to entrust responsibilities for applied and basic research to the university faculties and to make effective research activity an important criterion in the career development of university teachers.

7- The new information generated by agricultural research organizations is not regularly and systematically incorporated in the syllabi and textbooks of the universities, as a result of which the knowledge imparted to the students is often outdated and does not reflect current agricultural practices in the field.

In order to help overcome some of the above-mentioned shortcomings prevailing in the agricultural universities of Pakistan, Allama Iqbal Open University (AIOU) being pioneer in Distance Learning System in Pakistan, has, therefore, decided to initiate post-graduate level courses in agriculture. For enhancing the knowledge and skill of the professionals already working in Govt., Semi-Govt. or private organizations, the University will initially concentrate to offer three master level programmes through distance learning system i.e M.Sc. (Hons.) Agriculture Extension, M.Sc. (Hons.) Livestock Management, and M.Sc. Forestry Extension.

Teaching System, Methods and Techniques

The AIOU is primarily a distance teaching institution using multimedia techniques. It provides facilities for the educational uplift of the masses including those who are unable to attend conventional institutions and cannot leave their homes and jobs, by bringing education at their doorstep. The main components of its teaching system are:
1- Correspondence packages, which include self learning printed texts, and supplementary study material.

2- Radio and Television broadcasts specially prepared for distance learners.

3- Tutorial support through correspondence and face to face at study centres, where possible.

a- For continuous academic guidance, supervision and assessment, the University provides fortnightly tutorial support to all students through its regional centres.

b- The tutorials are arranged to facilitate the students to discuss academic problems and provide guidance to complete the required course work.

c- The schedule of the tutorial meetings and the dates of submission of assignments are mailed along with reading materials.

d- Tutors are appointed by the regional centres, who intimate the students about their appointments for a course.

4- Course assignments as an instrument both of teaching and continuous assessment.

Assignments are those written exercises which students complete while being at their own homes and places of work after having studied a certain part of their reading material. These are designed to enable students to relate their readings with their own studies/experiences. On completion, students will send each assignment to the respective tutors who return the same after marking and providing necessary academic guidance. A full credit course has four, while a half credit course has two written assignments.
Objectives of Higher Agricultural Education
Through Distance Learning System

The main objectives of the study are:

1- To improve the knowledge and skills of those agricultural graduates who are unable to continue their studies after completing B.Sc. (Hons.) in Agriculture, Livestock and Forestry from the existing agricultural universities for one or an other reason, and are now working in different departments, organizations, and agencies.

2- To improve the ability and self-confidence of the students to critically analyze the agriculture extension service and technology transfer system with a view to identifying difficulties, problems and issues in promoting applied research in farming systems, research, and extension.

3- To promote human resource development in Agriculture extension, livestock management, and forestry extension.

4- To enable the students to effectively communicate with the rural masses at their level besides generating and transferring innovations.

The Distance Learning System (DLS) is different from the conventional system and, in certain respects, has a visible edge over it. Under the DLS:

a) Physical presence of the students is not compulsory at the campus. Educational facilities are for those who cannot leave their homes and jobs.

b) The student's agitation, strikes and by-cotting of classes etc. is not possible in this system. Since their physical presence of the system is not compulsory at the campus, hence they are not supposed to play in the hands of politicians to create unrest and unpleasant atmosphere at campus. (strikes, demonstrations, agitation, descriptive protest etc.) The students of this system are well matured and responsible, enhancing their education at their homes and job places will
not join those activities which will disturb their education and would like to complete their studies with full concentration in due course of time.

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Non-Formal Education In Pakistan:
A Fundamental Step Towards Life Learning

By

Amjad Ali*

Pakistan had formally recognized the importance of education by convening the National Conference on Education in November 1947 - just after two months from its independence, and, perhaps more importantly, made specific reference to non-formal learning, informal learning and a variety of delivery approaches and learning systems. Undoubtedly this established a base for lifelong learning within Pakistan. However, regardless of how well meaning the intentions may have been, formal support for lifelong learning does not automatically create an integrated, fully developed system for learning opportunities that are available to all citizens everywhere throughout the life-span. This paper describes the development of elements of what will, hopefully, in time, become an integrated system of lifelong learning. Specific emphasis is placed on non-formal programmes of learning, and these are described in some detail. The paper will conclude that there is an imbalance between resources currently expended on formal education when compared with the money spent on, and the potential that exists within the non-formal sub-system.

Introduction

Education is now universally recognized to be the primary key to moral, cultural, political and socio-economic development of a nation. Being conscious of this reality, Pakistan has for some time recognized and clearly institutionalized the paramount importance of education. Article 37(b) of the 1973 Constitution of Islamic Republic of Pakistan states that

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"the State shall remove illiteracy and provide free and compulsory education within minimum possible period."¹

The present leaders in education, Government, religion, business, non-Governmental organizations, and professional associations also posit a lifelong learning orientation. They believe it is important to educate people not only for academic gains, but also to support economic competitiveness, cross-cultural understanding, social transformation and the development of a national identity. All of this will then bolster the platform from which Pakistan reaches out to the rest of the world.

According to Knapper & Cropley², lifelong learning is based on the notion that education is a continuing activity taking place throughout the life-span for everyone who lives with the accelerating pace of change. It involves learning by the people of all ages and from all walks of life, using the multiple learning resources of society in order to learn whatever they need or want to learn. Three basic concepts about the nature of lifelong learning are implied. First, people should be encouraged to become self-directed learners and active agents of their own education. Second, there are alternative educational sources besides schools and colleges that serve the educational needs of the people. Third, these learning resources and experiences are available to all, anytime, and on a full-time or part-time basis. Lifelong learning also establishes that self-improvement and enrichment are goals that are equally as important as the need to update professional and vocational skills.³

Educational System In Pakistan

Pakistan's educational system is composed of two major sub-systems, the formal and the non-formal. The formal sub-system consists of sequential academic schooling at several levels. Included are eight years of elementary education (primary & middle level), two years of secondary education, and a variety of post-secondary programmes. The post-secondary levels include one to three years of technical/vocational education or a minimum of four years of tertiary education. The completion of each level is a prerequisite for entry into the next. The formal education sub-system provides students with basic skills of numeracy and functional literacy and grants certifications of proficiency in different academic disciplines.
Non-formal education may be described as "any educational activity organized outside the established formal system—whether functioning separately as a significant component of a broad activity and designed to serve identifiable clientele and educational objectives". Definitions aside, the characteristics of non-formal education make it quite different from the formal sub-system in a number of ways. First, non-formal education addresses the needs of those who were not able to participate in the formal sub-system. In this regard, the clientele are quite different. A substantial number dropped out of the formal sub-system, the reasons for this being numerous though mostly centred on poverty. The organization, specific activities and delivery methods associated with non-formal education are designed to meet the express needs of the distinct clientele. At present, non-formal education in Pakistan has the following thrusts:

(i) Family life skills, including health, nutrition, childcare, household management, and family planning.

(ii) The promotion of literacy programmes for the attainment of basic skills that include numeracy and functional literacy and which are basic needs for every individual.

(iii) The development of livelihood skills which manifest in the individual specific competencies that prepare, improve, and enhance employability and economic productivity.

(iv) The expansion of certification and equivalency programmes, which are administered by the formal education sub-system, into the non-formal sector.

Non-formal education is provided separately and apart from the formal school sub-system and does not serve as an entry point to a higher level of formal education. In this regard the two sub-systems are separate, and little room for movement between the two is currently available. Non-formal education concentrates on the acquisition of skills necessary for
employability and competitiveness in the labour market. The availability of non-formal education expands educational access to more citizens representing a variety of demographic characteristics, socioeconomic origins, and general interests. In effect, the non-formal sub-system could make education available to a very large number of Pakistanis who would otherwise not have an opportunity to participate in any educational opportunities.

Given this brief description of the formal and non-formal sub-systems of education in Pakistan, it is apparent that a sub-system of lifelong learning would lean heavily on both. Knapper & Cropley describe lifelong learning as an overarching umbrella, perhaps best characterised as a context rather than a programme or programmes, from whose central hub radiates a variety of spokes each of which, perhaps, represents an educational opportunity. To take the metaphor further, in Pakistani context, the formal and non-formal education sub-systems, as defined and described here, are major spokes, from which a whole series of other spokes arise. (It is important to note that neither reflects the very significant and important "informal" component of lifelong learning.)

Most interesting and germane to this paper is the fact that schooling in Pakistan has been equated almost entirely to the formal sub-system rather than the non-formal, in spite of the size and importance of the latter. The structured period of formal schooling, which involves preparation for adult life and which ends when one receives a diploma, is the primary concern of legislators and educators. The formal diploma, for its part, is the passport to economic and social mobility and, as a result, emphasis and support in terms of resources, policies and programmes have always been given to the formal education sub-system notwithstanding recent efforts to promote the visibility and advantages of the non-formal sub-system.

Development Of Non-Formal Education In Pakistan

A review of the development of the educational system in Pakistan reveals that there have been significant efforts directed towards the development and institutionalization of non-formal education. By acknowledging that the formal sub-system was not able to meet the broad learning requirements of individuals and communities, a variety of educational projects and delivery systems were necessary. Different Governments, with the help of various aided agencies, stressed the
importance of various non-formal learning approaches and methodologies to supplement, complement and enrich formal education. The existence of following agencies is indicative of the large reservoir of experiences and activities, which may form the basis for a viable programme of Non-formal Education in Pakistan. Although non-formal in nature, some have links to the formal education sector.

Iqra Pilot Project & Nai Roshni Schools

The Literacy and Mass Education Commission (LAMEC) established in 1981, which started Iqra Pilot Project and Nai Roshni Schools, both aimed at to literate people within a shortest possible time. These two projects could not work out successfully because of mismanagement, inefficiency and lack of coordination.7

Another problem, which has been encountered in the delivery of non-formal education, is the lack of coordination and systematic planning amongst the various implementing agencies. Each organization has specific target clientele and activities, but there remains considerable overlap. As a result, there is a continuing need to consciously evaluate the functions and resources of all the deliverers involved with non-formal education in order to minimize overlap and maximize the use of scarce resources. Closer coordination and ongoing communication between officials and leaders in both the public and private sectors, as well as Government and NGOs, are required. Systematic linkages are the key to avoiding duplication.

Agency For Barani Area Development (Abad)

The Livelihood Skills Development Programme of Agency for Barani Area Development (ABAD) is designed, in the Punjab Province, to equip the unemployed and underemployed with vocational and technical skills through short term training programmes. Examples of courses offered include auto and farm machinery, welding, tailoring, motor winding, etc.

Also involved in skills training are Government Polytechnics, Colleges of Technology, vocational institutions and technical training centres. They target clientele in the out-of-school youth group, as well as,
like ABAD, the unemployed and underemployed. The skills training programmes that they offered are: drafting, electrician, auto, surveying, welding, computer trainings, etc.

**Adult Basic Education Society (ABES)**

Another livelihood skills project is Adult Basic Education Society (ABES)\(^8\), established in 1971, which is a Non-Governmental Organization. This is a community-based education intervention programme that seeks to improve the quality of life and develop skills needed locally within the community. The following programmes are offered by this organization:

(a) Primary Education Projects  
(b) Financial Literacy/Poverty Alleviation in Semi-urban, Under-Privileged Communities  
(c) Female Functional Literacy on Health Issues  
(d) Literacy Teachers/Supervisors Training Programme  
(e) Multigrade Teachers Training for NFPE  
(f) In-service Teachers Training Programme involving Activity Based Child Centred Techniques Through Multigrade Approach

In 1977, the Government in collaboration with UNESCO launched the Experimental Pilot Project Integrating Education and Rural Development (EPPIERD) aimed at to upgrade human resource base through literacy programming, industry training and upgrading, and value enhancement for development.

**Allama Iqbal Open University**

In 1974, the Government of Pakistan established the Allama Iqbal Open University (AIOU), an institutional arm that embodies the philosophy of open learning system. AIOU reaches out, through the distance and open learning modes to people who are not able to participate in classroom style education. The AIOU is the biggest campus because it offers courses throughout the country.
The movement towards non-formal distance education by establishing the AIOU is a timely one. Distance education has the potential to contribute significantly to human resource development by widening access to higher education and reducing costs for students, industry and the Government. In Pakistan, a country with more than 140 million population, the distance education has opened windows of opportunity, break down barriers of time and space, and unleash the full potential for non-formal education as a viable alternative to the formal sub-system. This is the opportunity that faces Pakistan as it stands at the threshold of the third millennium, and policy makers need to focus directly and with deliberate reflection on the opportunities presented.

From the very beginning, the AIOU has been carrying out variety of non-formal educational and learning programmes and projects that respond to the specific and immediate needs of the communities they serve.

The programmes offered by AIOU focus on a multiplicity of curriculum areas using an assortment of delivery approaches. Included are livelihood skills training, vocational and technical training, and course delivery through evening programmes for adult learners, instruction in family life skills for men and women, and courses and programmes in values formation. These programmes and the associated extension services seek to empower learners and improve the quality of life for the individuals and their families. The AIOU faculty members act in an advisory capacity for the programmes, alongside students and graduates. At the same time, the AIOU supports the wider community by making its physical resources available for non-formal education, and it establishes ongoing links with non-formal education graduates in order to provide them with upgrading and retraining initiatives. In various ways, therefore, the broader programming associated with non-formal education directly provides and supports greater service to the community.

Recent Developments In Non-Formal Education In Pakistan

Recognizing and supporting it in National Education Policy 1998-2010 further elevated the importance of non-formal education, as well as
informal and indigenous education. It reveals that effective steps shall be taken for imparting and spreading non-formal, informal and indigenous learning systems, as well as self-learning, independent, and out-of-school study programmes, particularly those that respond to community needs, and provide adult citizens, the disabled, out-of-school youth with learning in civics, vocational efficiency and other skills.

As described earlier, both public and private sector organizations conduct non-formal educational programmes. Within the Government, the primary agency is the Ministry of Education. Almost all Government agencies, including the Ministries of Health, Agriculture, Trade and Industry, and Social Welfare and Development, have developed and integrated non-formal education into their activities.

Regardless of Government support and involvement, the strongest proponents and most active implementers of non-formal education in Pakistan have been and continue to be the private schools, mosques, churches, civic organizations and foundations. Their activities range from basic level skills training through to values formation. The delivery systems for many of these activities include seminars and workshops, community assemblies, television and radio broadcast programming, correspondence courses, home visits, self-directed learning modules, and practical work. The curricula designs of the various programmes vary from agency to agency and are tailored to the specific needs of the clientele.

Conclusion

It is important to acknowledge that many initiatives related to non-formal education have been implemented within Pakistan during the past few years. However, there remains a need for the educational system broadly, and especially institutions of higher education, to redirect programmes and services in an effort to balance these with the larger society's need for lifelong learning opportunities. Higher education institutions need to assume a far greater role in promoting the goals of lifelong learning. Universities and colleges should take the lead by introducing a full range of innovative programming and other academic services. Curricula should embrace and reflect technological, economic,

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1 Both PTV & PBC have vitally contributed for the development of a sound policy line and workable action plan for non-formal education [Dr. Shaukat Ali Siddiqi, Pakistan Journal of Distance Education, The Need for Non-Formal Education in Pakistan, Allama Iqbal Open University, Islamabad, Vol.1, Spring 1984, p.25
social and cultural issues, and non-traditional delivery methods should be part of every institution's repertoire. In a rapidly changing world, colleges and universities need to cater to the demands of a more diversified clientele and respond to the growing needs of the labour market.

Despite significant progress in the development and delivery of non-formal educational opportunities within the last two decades, there continues to be a shortfall in terms of what has been achieved versus the full potential to enrich the overall system of education. Although the Government formally supports non-formal education, and has specifically referred to its importance and value in the constitution, funds for non-formal educational programmes continue to be inadequate. National Education Policy 1998-2010 has openly lamented the disparity between funds allocated to formal and non-formal education. Lack of funding and other resources hampers the delivery of non-formal education services in Pakistan, and will likely continue to do so into the future. This lack of support or imbalance in funding can be attributed in part to the strong and long-entrenched interests within the formal sub-system, coupled with the relative newness of the non-formal sub-system. Policy makers need to be encouraged to assess the relative potential of the two sub-systems, the formal and the non-formal, and direct funding in such a way as to benefit the largest numbers of learners. In turn, this will have the greatest economic effect and benefits for Pakistan as a whole.

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Research Notes

Breaking Down the Walls: Computer Application in Correctional/Prison Education

By

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Abstract

As we approach the 21st century, information technology has reduced the world to a global village. One thing is certain, new instructional techniques with computers do provide a different modality of instruction. For the student, educational technologies allowed for increased individualization of learning. In prisons where new technologies are used students have access to extra tutorial tools that adjust to their attention spans and provide valuable and immediate feedback. The computer holds a lot of potential for literacy enhancement which is currently untapped in Nigerian prisons.

Introduction

At this point in time, there is some consensus that the whole world has become a global village. This has been made possible through faster means of transportation and communication, especially with the use of the computer. As we prepare to enter the 21st century, the computer has become more widely available in the home, office and industry in Nigeria than it was five years ago. The University of Benin, Benin city launched its

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Internet service in March, 1998. There is no doubt in our minds that other universities and higher institutions are linked to the Internet in Nigeria. In the next couple of years, most departments in the older universities will be connected to the Internet.

At this point in time, the computer is being put into a thousand and one activities in different parts of the world. From Africa to Asia, Europe to North America, the computer is being utilised for more communication purposes today than a decade ago. From the schools to the hospitals, industries to prisons, home to churches, education constitute one of the major roles of the computer. On the whole, the application of the computer covers various aspects of education which include teaching, research, programme planning, students individual assessment and evaluation among others.

In view of the ever increasing role of the computer as a tool for literacy enhancement in correctional education in the prisons the world over, this paper will focus on computer application as an innovative approach to literacy programme in the prisons in Nigeria.

The paper will explore the vast potentials of computer applications for literacy enhancement in general and correctional education in particular. Consciously or unconsciously, people still envisage an educational leadership role for computers in the years ahead. The argument of this paper is that the computer holds a lot of potentials for literacy enhancement which is currently untapped. In view of the loss of freedom which all prison inmates experience, the computer provides a viable means of literally getting out of the prison walls to get educational information thousands of miles away. For thousands of women and men locked away behind prison walls, and are in need of education, the computer and Internet breaks down the walls and enable them reach out to databases and libraries the world over. Computers, interactive video disks, and other new information technology offer a face-saving way to learn basic skills that differs from traditional school learning (Askov and Turner, 1990). Most under-educated adults may not have had positive and pleasant experiences with previous schooling. Using computer aided instruction allow adults to learn basic literacy skills in new ways, so that they do not have to relive those negative experiences of frustration, failures and humiliation that they may have endured as children in school (Askov and Turner, 1990).
Although the computer has been used in correctional education in Europe and North America, we will examine the concept of the Internet which is the most recent of the computer applications in communication in the next section.

The Internet

As its name implies, it is an interconnected series of back bone wide area networks (LANS) around the globe. Its beginning goes back to Untied States', Department of Defence Research in the early 1970s (Gill, 1986). Awake (1997) describes the Internet like:

"...........a room filled with many spiders, each spinning its own web. The webs are so interconnected that the spider can travel freely within this maze. You now have a simplified view of the Internet – a global collection of different types of computer networks that are linked together."

The Internet concept is further illustrate with the telephone which is much more readily available here in Nigeria. Awake (1997) concludes that:

"Just as a telephone enables you to talk to someone on the other side of the earth who also has a phone, the Internet enables a person to sit at his computer and exchange information with other computer users at any place in the world."

Although, the concept began more than 20 years ago, it has assumed prominence in the past couple of years. With more than 20 million regular users, the Internet has become the central focus and fastlane on what is sometimes referred to as the "Information Superhighway" (Gill, 1996). However, unlike the information superhighway, with little meaning, the Internet is very real.

As stated above, the Internet began as a research project for the US Department of Defence Advanced Projects Research Agency (ARPA). The original concept was a military communications net work. Before long, academics and private researchers joined the drive to develop a wide-area network that connected computers across geographical distances so they could share scarce and expensive computers and their files. The first incarnation of the Internet, not surprisingly was named ARPANET. This
became the main backbone from which today’s Internet emerged (Gill, 1996).

About the mid 1970s, developers, and researchers working in the ARPANET community had developed a machine – independent communications protocol, suite, the Transfer Communication Protocol/Internet Protocol (TCP/TP). This period is still the foundation of the Internet and has become the primary force in open systems and distributed computing (Gill, 1996). The Internet’s big break into the mainstream came in the early 1990’s. Computer researchers working at the European Centre for Nuclear Physics (CERN) in Geneva, developed the World Wide Web(W W W) in March, 1989. Thus, the objectives for w w w system arose:

*from the geographical dispersion of large collaborations, and fast turnover of fellows, students and visiting scientists who had to get up to speed on projects and leave a lasting contribution before leaving (Zeltser, 1998).*

The World Wide Web in simple terms is an Internet based computer network that allows users on one computer to access information stored in another through the World-wide Network. It is based on the principle that if information is available, then any authorized person should be able to access it from anywhere in the world. To a large extent, the Internet has increased in popularity because of the use of browsers (Awake, 1997). In simple terms, the browser is a software tool that greatly simplifies the process of a user’s ‘visiting’ different locations on the Internet. Two common browsers are mosaic and netscape. The browser can ‘speak’ with its neighbour network by means of a common set of rules created by the Internet designers (Awake 1997).

In spite of these positive remarks about the Internet, there is no central over it. It is a complete chaos and nobody makes or enforces rules, with the exception of the administrators of the Internet. This also makes it possible for the Internet to be used for negative purposes.

**The Context of Prison Education**

The term correctional education is used to denote educational programmes for prison inmates. In Nigeria, education and library services were introduced into all convict prisons about 1947. However, less
attention has been paid to the provision of correctional education in colonial and post colonial periods. At this point in time, there is very little improvement in the provision of prison education. The Civil Liberties Organisation (CLO), in a report, revealed the absence of properly-funded educational programmes in Nigerian prisons (The Guardian, 1994:2). The absence of properly funded educational programmes have also been observed by other writers (News watch, 1985; Enuku, 1987, 1989, 1990, 1991a, 1991b, 1998) in spite of the fact that there are thousands of men and women who deserve education in Nigerian prisons. Prisoners are indeed generally young, about 80 percent under 30 years old. By age groups, those aged 18,19 and 20 are the most numerous. Prisoners are also generally male. Literarily educational level of prison inmates indicate that even in the industrialised countries of the world, some 25-40 percent are uneducated (UN and UIIE, 1995:23) Data obtained from Kaduna prison in 1992, indicate that half of the 1,248 inmates have no previous education. It is also observed that most prison inmates are of low self-esteem.

Against this backdrop, education in prison ought to be encouraged by the right to education which is well enunciated in the Universal Declaration of Human Rights (Article 26) and in the International Convenant on Economic, Social and Cultural Rights (Article 13). These efforts are further strengthened by UNESCO’s declaration of the right to learn.

With less than two years to the 21st century, new information technology has reduced the globe to a small village. It is this information revolution that has improved the capacity for adult literacy development the world over. Through the application of computer learning networks, individual learners spread over wide geographical areas could form learning networks to share experiences and information (Johnson, 1985:29-35). This creative application of computers in literacy enhancement has been effectively utilised for education in adult learning situations in Europe and North America for well over 25 years. In the UK, all prisons are linked with the Open University Library through computers, while in the USA, correctional classes are linked with community colleges through computer networks. The potential application of the computer and Internet for innovative approaches to correctional education in Nigerian prisons will be examined in the following section.
Assessment of Inmates

Anecdotal evidence, available in Nigerian prisons, indicate that individual inmates are not assessed on reception to identify level of literacy. Thus, in prisons were any form of education is available all inmates who are interested are grouped together without identifying the varied degrees of age, experience and background which should inform entry level into literacy programmes. The absence of individualised testing makes it impossible to focus the learner’s attention to specific deficiency area for remediation. One of such tests is Comprehensive Adult Student Assessment System (CASAS). It is a comprehensive curriculum-based educational management and assessment system which measures identified competencies of local education programmes, provides information about learners placement, progress in a format that is meaningful to the learner, facilitator and the programme manager (Breslauer, 1991:12), CASAS is based on the rationale that adult learning is most effective, when it is relevant to learners goals and identified needs, when learners can enter a programme and level that best matches their current level of functioning, and when the assessment process monitors progress in relation to their goals (Breslauer, 1991:12).

Another assessment instrument is Computer Adaptive Testing (CAT) which is proposed as an alternative ideally suited for use in the correctional education environment. It is a test tailored to an examinee’s ability (Hatman, 1989:138). The learners profiles provide an accurate and efficient means of placing a learner into an instructional programme. Learners who were tested with CAT indicated that they believe the system is fairer and that it gives a better picture of what they know in a shorter time period. They also feel that taking a test by computer is more fun than taking a traditional paper and pencil test. Various other writers have identified computer based individual learners assessment as a must in correctional education. Suffice to say that if we are going to make any progress after more than three National Mass Literacy Campaigns, there is an urgent need to adopt the use of computer based test in our literacy classes in general and in correctional education programmes in particular.
Record Keeping

The other area of computer application in correctional education is in the area of record keeping. Computers can be used for data analysis and record keeping like attendance records, grades and transcripts. Generally, when an inmate gets transferred from one prison to another in our prisons no educational records are transferred to the next prison indicating educational programmes and level of proficiency of inmates. With the computer it is very easy for prison X to access the computers of prison Y to get relevant educational and background information of inmates transferred into it. This has the added advantage of saving paper work for prison administrators.

Computer as a Teaching Strategy

One other very compelling reason for using computers is the impact on learners. Askov and Turner (1988:85) report a new found sense of empowerment and control learning that was expressed by learners in correctional institutions. This enhanced self-esteem is essential not only for learning literacy skills but also survival ‘on the outside’. Correctional educators often that the sense of empowerment leads to an enhanced self-esteem which may also result in the inmates learning to assume and accept responsibility, certainly a worth while goal for correctional education. The computer has already been used in adult education centres operated by the Ministry of Education for basic word processing in the United Arab Emirate with positive results (Jones, 1996:52).

A word of caution is in order here. Computer technology is not a panacea for the difficult literacy issues confronting those in correctional facilities rather the computer represent a significant educational opportunity that shall be included in any quality educational programme (Askov and Turner 1990:85). The relevance of new information technology and its use within the curriculum is a challenge facing adult educators (Jones, 1996:52).

Visual technology is attractive and interesting to learners, and frequently helps get them into the classroom. In the USA, it has been observed that many prison inmates were reluctant to admit that they cannot read and were unwilling to be seen working with a teacher (Oliver, 1990:96). However, inmates were prepared to work on a computer which is seen as a task reserved for bright people and no sigma attached. It has
thus been used to teach reading quickly and efficiently in the prisons. Computer aided instruction teach learners how to read and write phonemically.

The use of the Internet as an educational tool cannot be over emphasised. In the correctional environment it helps to break down barriers (prison walls), link people together, easily and cheaply. The use of electronic mail (e-mail) allows close contact with friends and relations in or outside the prisons. The need to continually link inmates to the outside community is to underline the fact that the inmates is still a member of the society and is not to be excluded from it (Langer, 1989). This is also echoed in UN Resolutions on the treatment of the prisoners (UN and UIE 1995:7). The British Broadcasting Corporation BBC has a web site for teaching English language. With computers and Internet services extended to our prisons, the prison inmates may benefit from BBC programmes. Bill Gates of Microsoft was undoubtedly right when he remarked recently that the Internet is perhaps the greatest thing invented this century.

In the years ahead, as more and more correctional education programmes begin to address the needs of adult and adolescent learners in need of literacy skills, the use of network computers – based education (CBE) should be considered a viable option. A fundamental advantage offered by networked CBE is ease of dissemination (Siegel, 1990:2). Training requirements although still crucial to success, are modest alongside those of any other approach. A computer can work with each student as though the student were the only one, and can vary the material presented contingent upon details of each student's performance in ways quite beyond the capacity of any human being and any book.

Computer offers a face-saving way to learn basic skills that differ from traditional means of enhancing literacy skills to adults. Many under-educated adults have not had good experiences with previous schooling. Using computers allow adults to learn basic skills in new ways. Thus, for a substantial and crucial portion of literacy instruction, Computer Based Education (CBE) can be both efficient and engaging to a degree that cannot be matched by a tutor (Siegel, 1990:3)
Advantages

*Privacy:* In computer based instruction, it is only his/her teacher who knows the actual level of the learner. Once the student learns how to operate the computer, he/she can work independently without anyone’s knowledge. This privacy is particularly important in over-crowded prisons where privacy is difficult.

*Individualization:* Instruction can be tailored to the inmates’ rather than those of the group. This contributes to the tremendous motivation to use computers.

*Control of learning:* The adult learner gradually takes control of the learning situation as he/she learns how to use the computer. This is perhaps the most compelling reason to use computers. What computer instruction does represent within the very tense prison environment is a genuine approach to fostering a degree of communicative competence.

*Cost:* The system is cost effective, especially when the special difficulties by the prison environment are taken into account. An extensive evaluation (ASKOV and Turner, 1990) of an urban literacy has revealed that delivering instruction through computers is no more expensive than traditional instruction with advantages in achievement gains. In fact, more students than originally anticipated could be served through using computers in instruction.

*Flexibility in Scheduling:* While the use of computers for instruction may not eliminate the need for group work, it can offer opportunities for instruction in inmate’s spare time. This factor is particularly important in correctional education where inmate’s schedule is sometimes changed on short notice due to factors beyond the prison teachers’ control.

*Modern Way to learn:* Computer technology is revolutionalizing the workplace and most organisations now look to computers to upgrade the learning skills of workers. A certain faith in technology exists in the modern mind. This faith can help inmates overcome feeling inadequacy as they approach the tasks of learning basic skills as adults. Use of computers can also provide comfort and familiarity with computers (computer literacy) as well as basic skill
instruction. Even some familiarity with computers may make an inmate more marketable in the work place upon release.

Now lets consider the problems that can be encountered in using computers for instruction in prison education. These should be examined before adopting computers as a means of instruction.

Disadvantages

Computers and especially the Internet certainly have potentials for educational use and day-to-day communication. Yet stripped of its high-tech gloss, the Internet is faced with some of the same problems that have long afflicted television, telephones, newspaper and libraries. These problems include:

**Negative Uses of the Internet:** The Internet is capable of being put into various negative uses like the availability of pornographic materials on the Internet, illegal bank transfers, availability of recipes for crime including how to mass murder and deliberate infection of systems with virus (Awake, 1997).

**Lack of Compatibility:** Computers vary from one manufacturer to the other. This makes it difficult to identify appropriate software.

**Lack of Expertise:** In most prisons, there are no trained personnel to set up the equipment, repair when there are breakdowns and train teachers and tutors in the use of the computer. Thus resource person also needs to keep up with what is happening in not only computer technology but also in education to keep equipment up graded and materials current.

**Role Changes:** Computers allow the students take control over their learning. This reduces the role of the teacher in the learning process which could lead to teachers feeling displaced by computers. This could lead teachers to become resistant to using computer technology in correctional education. Regular training for teachers can help to overcome those feelings of displacement and give teachers a viable and important role in instruction.
Recommendation for Implementation

The current practice of correctional education in Nigerian prison gives a pessimistic outlook regarding the potential use of computers that are purported in this paper. In order to introduce the use of computers in correctional education, the following conditions should be met in formulating prison policy:

(a) There is need to change extant government policy that forbids the use of radios and television sets by prison inmates. There is need for a human and feasible policy in terms of treating prison inmates like human with fundamental human rights.

(b) There is need for a change in orientation of prison officers which should be clearly stated in the need policy.

(c) There is need for a review of the role education in prison regimes. This should be part of the general policy review which should emphasise the primary role of educational programmes in prison activities as is the case in Europe and North America. With a properly organised and funded educational programmes in the prisons, the use of instructional media like the computer will necessarily follow. It is difficult to push the computer into the background in any meaningful education programme at this point in time.

(d) There is need to train prison officers to use and maintain the computers that will be used in educational programmes. This may be an attractive option to prison officers who have been used to manual equipments.

Conclusion

The list of activities proposed in this paper is illustrative and suggestive, not exhaustive. This paper tried to suggest positive use of computer in literacy enhancement in correctional education. Computer-based education has been used extensively in prisons throughout the US and Canada, unlocking doors of opportunity for both staff and inmates.
With over 50% of all inmates functionally illiterate in our prisons it is time we put computers behind bars. The vast potentials which the growing network of computers represent, remain largely untapped in correctional education in Nigeria. It is a dynamic network that represent a remarkable opportunity that breaks down prison walls and allow inmates reach out to information and knowledge thousands of miles away.

References


The Interactive Multimedia and Its Use in Distance Education

By

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Interactive Multimedia (IMM) has only recently emerged as an educational tool, yet in a short time has developed a powerful reputation in distance education and many ardent and enthusiastic followers. As with most new and innovative technologies, there are many beliefs, opinions, advantages and limitations about the IMM that drive its use which in the light of day can be difficult to substantiate. The focus of the paper is the use of IMM technology in distance education that will encourage educators to think about IMM to launch new courses in this environment. It will also discuss some of the popular myths regarding educational use of IMM, its strengths, limitations and associated delivery technologies.

Contributors

Introduction

The increased use of computer and multimedia technologies is having a considerable impact on improving access to the quality of education. Interactive multimedia (IMM) environments that offer ready access to the large amount of information in different formats (text, numeric, audio, video, animation, images, drawings), have long been a dream of communicators and educators. However, only with the recent development of cheap but powerful computers has this dream become a viable educational goal. IMM environments may employ different

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pedagogical models from open resource environments where the learner navigates freely through large amounts of information, to more system-controlled environments, perhaps based on an instructional design model. Many people believe that multimedia has the capacity to enhance learning above and beyond most other forms of technology. People tend to attribute much of the learning success that is derived from the use of multimedia and to the technology itself.

Interactive Multimedia in distance education has greater influence on the learning that is achieved when it is used in instructional settings. The technology and the media are the vehicles that deliver the instruction. It is the nature of the supported learning environment that has the biggest impact on what is learned. The reason why multimedia and has become favoured educational technologies in the nineties is that they enable broad and flexible use of a ranges of instructional models and formats in distance education. When used astutely as an instructional medium, it provide many learning opportunities and support a wide variety of learning processes and learning styles simultaneously. It provides access to a range of instructional tools that can enhance learning. It is the way these tools, strategies and processes are used that determine learning outcomes rather than their use alone.

1. Popular Myths Regarding the Educational use of IMM

To know the impact and use of IMM in correct context, it is important to go through some of the popular myths that surround the educational use of IMM. These are as follows:

2.1 Multimedia Provide an easy way to learn

Teachers and instructors have always been seeking ways to ease the burden of learning for their students. It is very important for distance education. Learning has tended to be a difficult and painful process for some and the prospect of reducing the arder and the difficulty associated with learning has been seen by many as a way forward. The multimedia is quite appealing environments within which to learn.

A significant amount of research (Reeves, 1993; Zuber, 1984) into the use of technologies to ease learning has been carried out with video instruction. The video is an interesting
piece of technology because of its link with television. Students tend to have experienced television a great deal in their lives and much of their viewing has been for pleasure and relaxation. As a consequence, when students view television (and video) they tend to do so in a relaxed state of mind. Studies (Herington, 1993; Gayeski, 1984, Oliver, 1995, 1998; Latchmen, 1993; Schneir, 1993) have revealed that students view television and video as easy learning environments and under these conditions, less learning outcomes are achieved. When students view a medium as being easy to learn from, they invest less mental effort. The research (Herington & Oliver, 1993; Laurillard, 1995) has shown with both video and multimedia that the lower amounts of invested mental effort are associated with lower amounts of learning. In order for learning to be more effective, students must judge the medium as requiring mental effort and must exert this effort during the viewing or instructional process. When students find multimedia easy to learn from, their responses should be an indication to the instructor that their levels of learning are less than what should be expected. It is important in planning and developing multimedia materials to keep the tasks and activities at a level which the students find challenging and difficult in parts. If and when the materials are perceived by the students to lack cognitive rigour, much of the learning potential can be lost. This situation is possible in settings where the student are totally free to choose their own paths through the materials and where the students are free to avoid the hard decisions. Instructional materials that enable free browsing with little cognitive demand are likely to be less effective than those where the students are compelled to complete tasks and where completions is monitored and checked.

2.2 Multimedia will Replace the Need for face-to-face Teaching

Many people discovering multimedia for the first time imagine that the best use of the technology is in the creation of instructional packages that replace conventional teaching. For example, as a replacement for the complete lecture
series in subject or course, or as a complete entity in an open education programme. People often imagine a multimedia package as the single instructional component in a course and imagine the best courses and subjects will be those delivered completely in a networked and computer-based form.

Multimedia provide a powerful supplement to conventional instruction and materials but they should never been seen as a total replacement. There is still so much in a face-to-face environment that cannot be replicated through computer-based delivery.

In distance education and open learning, much of the content is still better delivered in the traditional paper-based methods. In instances where the learning objectives are towards developing understanding or developing a conceptual knowledge, multimedia and networked materials can be effective. In such instances the materials can be designed to provide interactive activities or learning environments that the students can control in developing the higher levels of knowledge required.

2.3 Multimedia is Enjoyable and Motivating to use

Many students to find multimedia materials motivating and appealing to use. As mentioned previously, well designed materials are able to provide a stimulating and challenging learning environment for students. But this attribute cannot be assumed of all materials. Multimedia materials can be repetitive and restrictive. In some cases where multimedia materials have been developed for instructional use, students have been found to show a preference for paper based materials and have avoided and skipped using the multimedia.

In instances where multimedia materials are replications of paper-based materials, the packages can become repetitive and dull. Students simply use the computer as and electronic page turning device which displays text and static images directly as they appeared in the original materials. Often
when interactions are included, they are low-level and memory tests, for example, responding to multiple choice questions, grouping items on the screen. So it is important to recognize when problems exist and to design the materials to minimize any inconvenience to the learner.

2.4 **Multimedia Materials Improves Access to Education**

One of the arguments that is commonly used to support the development of, and justify the expenditure on multimedia materials is that its use will improve educational access. The reasoning supporting this contention is that by removing the reliance on the need for students to attend classes and lectures and to be on-campus, education can be made available to more people. In the vein of other distance education and open learning materials, multimedia materials can provide education on demand.

While all this may be true in intention and spirit, the increased use of multimedia and materials for the delivery of educational programmes in distance mode and can limit rather than enhance access. Most of the problems stem from the demands that the use of multimedia place on access to high quality computers and telecommunications infrastructure. There are still far more students who do not have personal access to computers than those who do. And among those who do have access to personal computers, their machines are frequently below the specification required for modern multimedia applications.

Within the schools, colleges and universities themselves, computer laboratories are expensive entities to purchase, maintain and manage. The move to provide more education in a computer-based form necessitates increased expenditure on high level laboratories and infrastructure. This type of expense is frequently not considered when the costs of delivering education through this medium are determined. Under existing conditions, the notion that multimedia is able to improve access to education is questionable and this condition is likely to improve in years to come.
3. Advantages of IMM

IMM learning environments provide many of the advantages of other computer-based educational approaches (e.g. flexible delivery, interactivity). Additional, IMM environments provide the following advantages related to the tools they offer for interacting with vast amounts of media-rich information. IMM environments allow the use of multiple interlinked representations using different symbol systems (text, graphic, sound, video, animation) and can communicate information with a richness and in ways not previously possible.

IMM environments should also contain powerful tools to assist the user to do things not possible using traditional media. For example, tools can help the user to:

♦ find information (multiple indexes, word search and database queries);

♦ follow thematic links (hypertext links from words, regions and buttons);

♦ interact with the information in dynamic ways based on either learner or system control (e.g. suggesting that the user views materials not previously seen);

♦ visualize information in different ways (multiple interlinked representations);

♦ interpret information (multiple commentaries or interpretations from different perspectives, on-line glossaries and encyclopedia); and

♦ manipulate and use information (cut information from the IMM into their own documents, statistical tools to analyze data, graphic tools to plot data).

4. Limitations of IMM

♦ While IMM environments can offer the learner finger-tip access to large amounts of information, they must be
carefully designed so that the user does not become overwhelmed and disoriented.

♦ IMM technologies are relatively new, and educators are still discovering the best ways to apply these technologies in learning environments.

♦ The infrastructure to develop and deliver such environments is still being developed, and IMM environments require relatively powerful computers.

5. Interactive Multimedia and Different Delivery Technologies in Distance Education

There are many different technologies related to distance delivery. These technologies are classified into four generations (Taylor, 1995). Some of the characteristics of these delivery technologies which are relevant to the quality teaching and learning are on next page.
<table>
<thead>
<tr>
<th>Models of Distance Education and Associated Delivery Technologies</th>
<th>Characteristics of Delivery Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flexibility</td>
</tr>
<tr>
<td></td>
<td>Time</td>
</tr>
</tbody>
</table>

**First Generation**
- **The Correspondence Model**
  - Print: Yes, Yes, Yes, Yes, Yes

**Second generations**
- **The Multimedia Model**
  - Print: Yes, Yes, Yes, Yes, Yes
  - Audio tape: Yes, Yes, Yes, Yes, Yes
  - Video tape: Yes, Yes, Yes, Yes, Yes
  - Computer Based Learning (e.g. CML/CAL): Yes, Yes, Yes, Yes, Yes
  - Interactive Video (Disk and tape): Yes, Yes, Yes, Yes, Yes

**Third Generation**
- **The Tele Learning Model**
  - Audio teleconferencing: No, No, No, No, No
  - Video teleconferencing: No, No, No, No, No
  - Audio graphic communication: No, No, No, No, No
  - Broadcast TV/Radio and Audio tape: No, No, No, No, No

**Fourth Generation**
- **The Flexible Learning Model**
  - Interactive Multimedia (IMM): Yes, Yes, Yes, Yes, Yes
  - Internet based access to WWW resources: Yes, Yes, Yes, Yes, Yes
  - Computer Mediated Communication: Yes, Yes, Yes, Yes, Yes

At the time of using these technologies the following factors (Bates, 1990, 1995; Crock, 1994) should be taken into consideration:
- group size of learners and the number of sites to be used
- specialist lecturer availability,
- nature of the subject content,
- requirements for graphics and visual presentations,
- costs

Plater (1995) argued that every faculty member in all fields in any distance institutes must know how to use the technology and be able to teach effectively through distant interactions with learners and peers. So, they should know which delivery technology or media is the best. The following Table 2 (Rowntre, D. 1994) will help to understand this fact.

Table 2: Which media might best do what?

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pt</td>
</tr>
<tr>
<td>Provide a carefully argued analysis</td>
<td>✓</td>
</tr>
<tr>
<td>Convey sights, sounds and spirit of subject</td>
<td>✓</td>
</tr>
<tr>
<td>Build learner's ideas into the teaching</td>
<td>✓</td>
</tr>
<tr>
<td>Ask learners to answer questions about subject</td>
<td>✓</td>
</tr>
<tr>
<td>Enable learners to try things out, physically</td>
<td>✓</td>
</tr>
<tr>
<td>Ensure learners get physical feedback from real world</td>
<td>✓</td>
</tr>
<tr>
<td>Give learners standardized verbal feedback</td>
<td>✓</td>
</tr>
<tr>
<td>Give each learner unique, personal feedback</td>
<td>✓</td>
</tr>
<tr>
<td>Continuously alter teaching to suit each learner's needs</td>
<td>✓</td>
</tr>
<tr>
<td>Provide learners with a record of the learning experience</td>
<td>✓</td>
</tr>
</tbody>
</table>
Key: pt = print; au = audio; vi = video; ct = computer tutoring; cs = simulation; cc = computer conferencing; le = lecture; ff = face-to-face tutoring; tt = telephone; imm = interactive multimedia.

6. Issues for Future Considerations

Multimedia is a very expensive technology while others are more economical. These technologies should not being chosen as delivery media without due care being given to other alternatives. Many people today choose the technology without considering alternatives. In doing this they run the risk of under-utilizing the technology and wasting resources as they do it. So, the following critical issues that must be resolved at the time of considering the introduction of IMM in teaching and learning:

6.1 Organizational Issues

The existing technological infrastructure within a university or an institution is a major factor in introducing the IMM. It is often difficult to shift funds from existing 'traditional technologies' to newer ones, because of the threat to existing budgets and power bases. Innovation in this area depends essentially on 'champions for change' at a high level such as 'Vice-Chancellor or Dean'. However, those influential positions may sometimes champion a technology because it is new or leading edge' even though it may be an appropriate choice for the programme in question.

6.2 Instructional Design

The key process for improving the quality of teaching and learning is instructional design (Braden, 1996), which has received a significant boost from recent advances in instructional science (Anderson 1982; Glaser 1984; Kidd 1987; Landa 1976; Reigeluth 1989; Winn 1990; Litchfield, 1990). As with the development of all training and educational materials, the appropriate instructional design strategies must be employed. IMM by its very nature has the potential to magnify deficiencies in the design and production of materials. Lack of knowledge of the target audience, inappropriate delivery strategies, inadequate
assessment and evaluation programmes have all been associated with the high cost of IMM.

6.3 Indicative Costs

The total cost of completing an IMM programme under the best set of assumptions would be close to a six figure sum in dollars. With this type of investment it is important to maximize the number of end users of the product and attempt to use the generic features of the programme in other related and similar areas. Given the cost associated with IMM, it is worthwhile in the feasibility stage to ascertain the number of academic groups in different disciplinary areas who might benefit from using the programme, the number of areas within the chosen discipline which might make use of the programme and the potential to commercialize the technology at the project's completion. So concrete and clear cost benefit analysis should be required.

6.4 Timeliness

The minimum time required to undertake such a programme is least 12 months from conception to the production of an advanced prototype for trialling and feedback. It may be another year before a complete production is used by all students enrolled of the relevant unit. These time lines assume that a substantial amount of the content of the programme already exists as primary or secondary source material. Time must be factored in to apply for copyright on all non-original material to be used in the electronic environment. If media, information and other content have to be compiled and or gathered from scratch the period of development and production could easily extend to two years or more.

6.5 Process

IMM is far and away the most labor intensive and time-consuming technology to develop produce. Usually such programme are content and media intensive, which means that they require substantial input from teaching staff,
multimedia producers, possibly instructional designers, editors, graphic designers and copyright assistants. Given the magnitude of such project and the size of the team involved, a project manager may also be involved.

If you want to produce an IMM programme you should be familiar with the capability of the IMM environment by examining existing programme. Another step is to conceptualize the product in terms of the audience, content, functionality and relationship to other educational resources. Before beginning work on a fully interactive multimedia product it is possible, and advisable, to prototype simpler product before working on the full product.

6.6 Design

There are a large variety of ways in which multimedia and learning materials can be designed and implemented. Due to the large costs associated with development, the most effective materials from a cost-benefits standpoint are those where the technology and the instructional design have been matched to the learning aims.

Developing effective multimedia materials is not a matter of replicating conventional materials in an electronic format. The design must take into consideration the unique attributes of the technology, the learning potential afforded by considered use and the need for the use of sound instructional design principles to ensure maximum potential can be gained.

6.7 Skilled Professional Staff

At present, there is a shortage of skilled the professional staffs in interactive multimedia (IMM). This leads to significantly increased costs associated with finding and more importantly keeping IMM personnel, because of the practice of employers engaging in the "pirating" of trained experienced staff. A secondary effect of pirating is to inflate salaries in order to attract trained staff to make a move. Pressures associated with meeting the demand continue to
inhibit IMM growth as individuals remain unable to upgrade their expertise readily and the cost associated with importing expertise makes the introduction of IMM, unnecessarily in many cases, a high risk proposition (M. Crock, 1994).

7. Planning and Policy Developments for Open and Distance Education Providers

There are a number of planning and policy implications for open and distance providers. Among them following recommendations of M. Crock and J. Dekkers are mentionable.

♦ a need to maintain, and where appropriate further enhance, the existing open learning infrastructure to ensure that cost effective design, development and delivery of a full range of multimedia products for open learning can occur,

♦ establishment of research and development priorities to ensure the effective implementation and use of existing and emerging technological developments and instructional approaches for education and training in a range of contexts.

♦ development and implementation of staff development and training programmes and establishment of programme management structures to facilitate the planning and the adoption of new technologies for open learning.

8. Conclusions

It is likely in years to come as more and more educational are delivered through multimedia mode that distance learners with access to high quality personal machines will be distinctly advantaged over others who need to rely on facilities provided by the institution. The purpose of this paper is to encourage distance educators to consider how multimedia can aid in the delivery of quality educational programme. Its intention is to make readers think about their motives for using the new technologies and to ensure that their reasons are the right ones.

Many researchers suggest teachers the use of forms of multimedia in their teaching to solve existing problems. Teachers and educators are encouraged to look to explore the full cost of their decision to use
technology rather than simply accepting that any use is better than none. Technology use can greatly enhance many aspects of teaching and learning, but its use does not necessarily guarantee an improvement. In conclusion, it can be said that the researchers need to continue collectively study the effectiveness, suitability, future potentiality and implementation of existing interactive multimedia technology.

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3. Bates, A.W., Media and Technology in European Distance Education, EADTU, Hearleen, Belgium, 1990.


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ALLAMA IQBAL OPEN UNIVERSITY
Evaluation Through Justification Of The Course Materials Of Mathematics at SSC Level Of Bangladesh Open University (BOU)

By

Dr. Md. Nasirul Islam
Malay Kumar Bhowmick
Md. Shah Alam Sarker

Abstract

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- Review of routine and statistics
- Review of assessment result
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  - Discussion group
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In education, evaluation has a special role to play for evaluating course materials. There are three major things are to be considered there: The quality of learning may well one of the outcomes we need to evaluate. Islam and Kamal (1998) point out that teaching and learning are most coherent terms to both the teaching materials and the learner. They are close interrelated which is portrayed below:

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unconscious and they comes of poor family. We conducted a survey on enrolled students in the mathematics courses of SSC programme and other people involved with the courses: curriculum experts, subject experts, coordinators of the programme, tutors, students and guardians.

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At first we classified the different level of resource persons/experts who were considered as the respondents in the survey. There are six classes were counted as:

1. Curriculum experts = 03 (University level)
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6. Guardian/Father = 157

The sampling structure of the different level of respondents under different Regional Resource Centres (R.R.C) are given below:

<table>
<thead>
<tr>
<th></th>
<th>No. T.C</th>
<th>Headmaster/Coordinator</th>
<th>Mathematics Tutor</th>
<th>Student</th>
<th></th>
<th>Guardian/Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dhaka</td>
<td>65</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>Borisal</td>
<td>33</td>
<td>05</td>
<td>05</td>
<td>05</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>Mymensingh</td>
<td>52</td>
<td>08</td>
<td>08</td>
<td>08</td>
<td>71</td>
<td>53</td>
</tr>
<tr>
<td>Jessore</td>
<td>71</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>300</td>
<td>214</td>
</tr>
<tr>
<td>Chittagong</td>
<td>28</td>
<td>05</td>
<td>05</td>
<td>05</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>Sylhet</td>
<td>41</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>80</td>
<td>57</td>
</tr>
<tr>
<td>Bogra</td>
<td>29</td>
<td>04</td>
<td>04</td>
<td>04</td>
<td>25</td>
<td>204</td>
</tr>
<tr>
<td>Rangpur</td>
<td>34</td>
<td>06</td>
<td>06</td>
<td>06</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>Rajshahi</td>
<td>43</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>75</td>
<td>66</td>
</tr>
<tr>
<td>Comilla</td>
<td>36</td>
<td>06</td>
<td>06</td>
<td>06</td>
<td>50</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>432</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>908</td>
<td>698</td>
</tr>
</tbody>
</table>

124
The above samples are construed through stratified sampling. We took 10% students from different RRCs.

**Data Collection**

We went to the tutorial centres (TC) under different RRCs with necessary paper, information and questionnaire for collecting data. The Headmasters/Coordinators were informed previously to take necessary action. When we reached to the TCs, at first gave questionnaires to the students. Then we gave another type of questionnaires to the Headmaster/coordinator, tutors and Guardians (who were informed before) respectively. Then we collected the completed questionnaires from them on the same day. The same way of collecting data was applied in all the RRCs. In the mean time, we sent questionnaires to curriculum experts, subject (Mathematics) experts respectively.

**Presentation and analysis of the data**

There were two types of questionnaires for the curriculum and subject experts:

1. Rating scale at 5 level;
2. Open questionnaire

We made an average of the Rating scale data and presented it for analysis. Similarly, we processed the answers from the Tutors, Students, Guardians and Coordinators and presented them for analysis.

**Respondents’ Comments Curriculum experts**

1. The subject contents are mostly belong to curriculum
2. The subject content follows situation analysis model
3. The general objective of the curriculum can be achieved through the subject content
4. Curriculums are developed through objective model
5. Radio and T.V programme should be increased
6. Except set theory and function, all of the subject contents are sequentially presented
7. Geometry is to be moderated and some additional information is to be added
8. All objectives of the mathematics are belonged to Bloom's taxonomy. The subject contents are presented through the following sequence:
   1) Percentage
   2) Interest
   3) Set theory
   4) Function
   5) Statistics
   6) Factor analysis etc.

9. The Blooms objectives: Affective and psychomotor are followed more or less in the object content.

Subject experts

Subject experts' comments are almost same as that of curriculum experts. However, they emphasized on the following things:

1. The T.V, Radio and audio schedule are located clearly in each unit.
2. Motivate the tutor and student through workshop.
3. Printing mistakes are to be overcome.

Tutors, coordinators and students

Subject tutor made the same comments as the subject experts on the textbook of mathematics.

Guardians

They became familiar with the textbook through the learners. They suggested using colour pictures in the textbook and increasing radio, T.V and audio facilities.
Justification through examination

We selected 500 students randomly from different R.R.Cs who appeared at the final examination, 1996. The following frequency distribution table is obtained from the answer sheets of the exam.

<table>
<thead>
<tr>
<th>No. of question</th>
<th>No. of Students answered the question</th>
<th>No. of question</th>
<th>No. of Students answered the question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>08</td>
<td>10a</td>
<td>100</td>
</tr>
<tr>
<td>1b</td>
<td>06</td>
<td>10b</td>
<td>100</td>
</tr>
<tr>
<td>2a</td>
<td>70</td>
<td>10c</td>
<td>90</td>
</tr>
<tr>
<td>2b</td>
<td>40</td>
<td>11</td>
<td>97</td>
</tr>
<tr>
<td>3</td>
<td>80</td>
<td>12a</td>
<td>90</td>
</tr>
<tr>
<td>4</td>
<td>95</td>
<td>12b</td>
<td>80</td>
</tr>
<tr>
<td>5a</td>
<td>65</td>
<td>13a</td>
<td>60</td>
</tr>
<tr>
<td>5b</td>
<td>65</td>
<td>14a</td>
<td>30</td>
</tr>
<tr>
<td>6a</td>
<td>80</td>
<td>14b</td>
<td>30</td>
</tr>
<tr>
<td>6b</td>
<td>70</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>100</td>
<td>16a</td>
<td>05</td>
</tr>
<tr>
<td>8</td>
<td>100</td>
<td>16b</td>
<td>05</td>
</tr>
<tr>
<td>9a</td>
<td>100</td>
<td>17a</td>
<td>10</td>
</tr>
<tr>
<td>9b</td>
<td>100</td>
<td>17b</td>
<td>00</td>
</tr>
<tr>
<td>9c</td>
<td>100</td>
<td>18a</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18b</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18c</td>
<td>80</td>
</tr>
</tbody>
</table>

In the above frequency table, we considered the average number of students of different R.R.Cs answered the individual questions, which are given below though graph paper.
The above graph revealed that students are more interested to learn the problems of algebra and arithmetic. However, do not understand geometry and linguistic questions like definition, explanation of concepts etc.

Conclusion

Evaluation exhibits the fulfillment of the objectives, which belongs to the curriculum. Continuous evaluation system can improve the course materials through the respective organism of Bloom’s Taxonomy. Finally, after analysing the findings of the evaluation research, we can widely conclude that the following things should be considered carefully during the further improvement of the course materials of Mathematics courses:

- The quality of the course materials
- Minimum printing errors
- Needs of the learners
- Acceptability to the learners; and
- Desirability of the learners.

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1. Chapple, M and Murphy, R. (1996). The nominal group technique; extending the evaluation of student’s teaching and learning experiences, assessment and evaluation in higher education 21 (2), pp. 147-159.


services (new castle, new castle polytechnic and the CNNA).


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<tr>
<td>Dhaka</td>
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<td>432 70</td>
<td>70 70</td>
<td>908 698</td>
<td>1606 157</td>
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</table>
The above samples are construed through stratified sampling. We took 10% students from different RRCs.

Data Collection

We went to the tutorial centres (TC) under different RRCs with necessary paper, information and questionnaire for collecting data. The Headmasters/Coordinators were informed previously to take necessary action. When we reached to the TCs, at first gave questionnaires to the students. Then we gave another type of questionnaires to the Headmaster/coordinator, tutors and Guardians (who were informed before) respectively. Then we collected the completed questionnaires from them on the same day. The same way of collecting data was applied in all the RRCs. In the mean time, we sent questionnaires to curriculum experts, subject (Mathematics) experts respectively.

Presentation and analysis of the data

There were two types of questionnaires for the curriculum and subject experts:

1. Rating scale at 5 level;
2. Open questionnaire

We made an average of the Rating scale data and presented it for analysis. Similarly, we processed the answers from the Tutors, Students, Guardians and Coordinators and presented them for analysis.

Respondents' Comments Curriculum experts

1. The subject contents are mostly belong to curriculum
2. The subject content follows situation analysis model
3. The general objective of the curriculum can be achieved through the subject content
4. Curriculums are developed through objective model
5. Radio and T.V programme should be increased
6. Except set theory and function, all of the subject contents are sequentially presented
7. Geometry is to be moderated and some additional information is to be added
8. All objectives of the mathematics are belonged to Bloom's taxonomy. The subject contents are presented through the following sequence:
   1) Percentage
   2) Interest
   3) Set theory
   4) Function
   5) Statistics
   6) Factor analysis etc.

9. The Blooms objectives: Affective and psychomotor are followed more or less in the object content.

**Subject experts**

Subject experts' comments are almost same as that of curriculum experts. However, they emphasized on the following things:

1. The T.V, Radio and audio schedule are located clearly in each unit.
2. Motivate the tutor and student through workshop.
3. Printing mistakes are to be overcome.

**Tutors, coordinators and students**

Subject tutor made the same comments as the subject experts on the text book of mathematics.

**Guardians**

They became familiar with the textbook through the learners. they suggested using colour pictures in the textbook and increasing radio, T.V and audio facilites.
Justification through examination

We selected 500 students randomly from different R.R.Cs who appeared at the final examination, 1996. The following frequency distribution table is obtained from the answer sheets of the exam.

<table>
<thead>
<tr>
<th>No. of question</th>
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In the above frequency table, we considered the average number of students of different R.R.Cs answered the individual questions, which are given below though graph paper.
The above graph revealed that students are more interested to learn the problems of algebra and arithmetic. However, do not understand geometry and linguistic questions like definition, explanation of concepts etc.

Conclusion

Evaluation exhibits the fulfillment of the objectives, which belongs to the curriculum. Continuous evaluation system can improve the course materials through the respective organism of Bloom's Taxonomy. Finally, after analysing the findings of the evaluation research, we can widely conclude that the following things should be considered carefully during the further improvement of the course materials of Mathematics courses:

- The quality of the course materials
- Minimum printing errors
- Needs of the learners
- Acceptability to the learners; and
- Desirability of the learners.

References


services (new castle, new castle polytechnic and the CNNA).


CHARACTERISTICS OF CHILDREN’S ALTERNATIVE RESPONSES

By

DR. SABIR HUSSAIN RAJA*

1. Background of the Study

The fact that children tend to develop their own conceptions about the nature of the physical world, has been known since long. The German educator, Diesterweg (1790-1866) pointed out that it is of the utmost importance to start instruction from the student's point of view and that it is necessary for the teacher to investigate student's preconceptions. Formal research on the topic can be traced back to the earlier works of Piaget in which he employed for clinical interview technique for the investigation of children's interpretation of natural phenomena. A number of studies (1) have highlighted the substantive aspects of children's and adults' thinking concerning Aristotelian ideas and beliefs. Studies have been undertaken in almost all science subjects. Ricardo Trumper describes many of children's ideas on energy. He has also mentioned a bibliography updated by Pfundt and Duit (1988) which contains more than 1500 research articles on children's and adults' ideas and beliefs in different areas of science subjects.

Considering different researches, carried out by Driver, Guesne and Tiberghien, some common features of the children ideas are drawn.

i. Pupils initially base their reasoning on observable features in a problem situation.

ii. Children consider only limited aspects of particular physical situations with the focus of their attention appearing to depend on the saliency (the observable) of particular perceptual features.

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iii. Children focus their attention on change (observable) rather than on steady state situations.

iv. While explaining changes (observable) children’s reasoning tends to follow a casual linear sequence.

v. Children use different ideas having a range of connotations, which can be different and considerably more extensive than those used by scientists.

vi. Children make statements about a phenomena depending upon the context.

vii. Ideas held by the children in one area influence the concepts in the other areas.

Similarly, Hamlen reports some general features of children’s ideas. According to her, the children’s ideas:

i. emerge from a process of reasoning about experiences, rather than from childish fantasy or imaginations;

ii. would not, however, stand up to rigorous testing against evidence that was often available for the children to use had they wished to do so;

iii. sometimes required additional evidence to be made available if they were to be tested in practice;

iv. were influenced by other information than that which came from media, conventions of speech and of ways of representing things, influential adults and peers;

v. were often expressed in terms of words which seemed scientific, yet had, for the children, a meaning which was ill-defined, difficult to pin down and not apparently consistent with the scientific meaning.

A series of studies have been undertaken in Scotland by Johnstone, and his students, on selected conceptual areas in chemistry which indicate specific difficulties and misunderstandings arising in the course of instruction.

1. Present study: A research study was carried out by Sabir Hussain Raja at Glasgow University, Scotland in which alternative frameworks of the children at Primary and Early Secondary school pupils (age 8-14) have been explored.
2. Methodology

This research study was carried out in different phases:

A. During the first phase 93 children at P5, P6, P7 and S1 (8th class) were interviewed. The duration of each interview was about 15 minutes and the interviews were held in groups of two. For the interview purpose different pictures were used to illustrate the phenomena in different ways for every group of children. This helped the children to understand the questions and describe the phenomena. The topics chosen for the purpose were about the change in the size of the Moon, the Moon's eclipse, the rotation of the Earth, reflection, refraction, air-resistance, balance, change of day and night, evaporation, energy, forces, gravity and conduction etc. Moreover to make the interviews more interesting for the children, practical situations were created by using paper and wooden models and toys. The questions asked of the children were very simple, e.g. What do you think about this picture? Or will this model (of kite/aeroplane) work? Or how is some specific situation possible?

B. For the second phase such topics or phenomena were selected which were familiar to the children either informally or indirectly, often presented in a scientifically correct way e.g. through T.V., radio, videos, newspapers, cartoons and comics etc. The topics had not been formally taught at Primary level. The questions included were about dissolving or extracting a gas from a liquid (Coca Cola bottle); the shape of the Earth; clouds on Earth; rain; people living on Earth; seeing the Moon at night, winter and summer seasons and rotation of day and night. Overall 162 children from Primary 4 to Primary 7 were tested.

C. For the third phase ten practical activities, mainly based on energy concepts were devised, e.g.;

i. Bow and Arrow
ii. A dancing monkey  
(a game in which a model monkey moves in a water when a button is pressed)

iii. A Flute

iv. An Echo Killer (which produces different sounds when different buttons are pressed)

v. A Torch

vi. A Toy Helicopter

vii. A Liquid Timer (In which two immiscible liquids of different density are used; There are Two ‘frictionless’ wheels inside the Timer. When the Timer is turned over, the wheels turn due to falling/rising liquids.

viii. A Windmill (turning above a burning candle)

ix. A Steam Engine

x. A Hand Dynamo (in which a handle turns a dynamo to light a bulb)

During this phase, a station technique was applied. An open-ended questionnaire was also used. The students' answers were analysed on the basis of Explanation and description steps. Moreover, considering the age level of the children, very simple questions were asked and for the most of the activities only two questions were asked:

When the button of a certain activity was pressed:

i. What happened?
ii. What made it happen?

However, for the Liquid Timer and the Helicopter, three questions were asked for each activity. The questions asked for the Liquid Timer were:
When the Liquid Timer is turned over.

i. What makes the wheel turn round?
ii. What makes the blue liquid fall down?
iii. What makes the colourless liquid rise up?
The questions asked for the Helicopter were:

When the button is pressed:

i. What happened?
ii. What made the propellers go?
iii. What made the helicopter move about?

Overall 396 children were tested from P4 to S2 (9th grade) levels.

D. For the last phase of this research, activities having different number of steps for explanation were used.

1. Activities having a one-step reasoning chain; simple one step of cause and effect.

   a. **Puff Signals:** (Mixing of hot coloured water and cold plain water):
   Hot blue coloured water in a beaker. With aluminium foil cover on it is put inside a larger beaker half filled With cold water. Making a hole in the foil allows the hot blue coloured water to rise up in the form of puffs.

   b. **Floating Eggs:** Two beakers of the same volume are put in front of the child. Tap water is put in one of the beakers and salty water in the other. Two boiled eggs of the same size are immersed in the beakers. The egg immersed in tap water sinks whereas the egg in the salty water floats.

**Sky Hook:**

A piece of wood or Plastic is cut in the Form of a Hook. When one tries to balance it on its tail, it can not be Balanced. When a leather belt is placed on the hook, it can be balanced on its tail.
1. Activities having two steps of reasoning chain.
   
a. **Strange Diver**: A plastic bottle is filled with water and a dropper, Semi-filled with water, is placed inside the bottle. When the bottle is Pressed, the dropper (strange diver) falls to the bottom and rises up again When the pressure is released.

b. **Floating ice In Sunflower Oil**: Chilled sunflower oil is put in a long wide cylinder and Clamped on a stand. Dried ice cubes dropped in the oil which float. When the ice cubes melt, the melt water falls to the bottom whereas the ice cubes remain floating in the Oil.

c. **Pouring Water Out Of Can**: A Coca Cola can is emptied. Three holes are made of equal diameter on one end of the can. Water is put in the can. Water does not come out of the inverted can if two holes are blocked; water also does not come out if one hole is blocked and two are open and the can is balanced horizontally.

2. Activities having three steps of reasoning chain.
   
a. **Inflating A Balloon Inside A Bottle**: A balloon is put inside an empty plastic bottle. The bottle has a hole in it. When the hole is blocked, the balloon cannot be inflated. The balloon can be inflated easily when the hole is open. If the hole is blocked after the balloon has been inflated, the balloon does not deflate automatically.

b. **Inflating A Soap Bubble**: The mouth of a round bottom flask is dipped in a washing liquid. A thin layer of the liquid covers the mouth of the bottle. When the bottom of the bottle is covered with the hands, the bubble grows.

4. Activities having four steps of reasoning chain.
   
a. **Rising Water Puzzle**: Water is put in a large size watch glass. A small birthday candle is lit and put in the middle of the watch glass. The candle is covered
with an empty bottle. The candle goes out and water rises up in the bottle.

b. **Hand Dynamo**: A handle is moved to produce electricity in the dynamo which causes a bulb to light.

5. Activities having **five steps** of reasoning chain.

   a. **Balloon Fountain**: A glass tube is bent in the form “”. A jet is formed at one end of the bent tube. A balloon is attached to another straight glass tube. Both the tubes are passed through a rubber stopper fitted to the mouth of an empty plastic bottle. When the tube with jet inside the bottle is blocked, the balloon cannot be inflated. When that tube is opened, the balloon can be inflated easily. If the bottle is turned over and the tube, now unblocked, is dipped in water, water rushes inside the bottle through the jet in the form of a fountain.

   b. **Spiral Moving Over A Lit Candle**: A spiral of aluminium foil is hung over a lit candle and it turns.

   c. **Windmill Moving Over A Lit Candle**: A windmill is hung over a lit candle and it moves.

   For this last phase, again, the station technique was used but at each station, an expert was also present for probing the children’s understanding of the activities.

   **School Pupil Sample**: The selection of the sample was made by the teachers concerned. Only those children were included who were granted permission by their parents to join the test. Care was taken, again, to include an equal number of girls and boys. The children were organised to work in groups of two with the hope they might encourage/stimulate each other (as proved in the interview pulse) to take part more actively. Overall 147 children from primary 4 to 9th grade were included in the sample.
To understand the responses of the children, some example from different phases are set out:

1) a picture was shown to a group of children. In the picture a boy is skating in a half ramp. After asking some questions about skating, the researcher asked one pupil:

R (Researcher). Where do you skate normally?
P (Pupil). Just down the street.
R But how do you skate on the street?
P Put one foot on it and push with the other and go on the street.
R If the street goes upward like this ramp then....?
P You go back down.
R Why?
P Because gravity pulls it down.

The pupil has the idea that gravity pulls things only if they are on the slide or (might be) raised above from the ground.

2.A) burner is put under the water tank of a steam engine. After a few seconds the steam engine starts moveing. A group of children explains as "there is a fan underneath the tank which moves it". another group thinks that "there is a battery inside the tank which moves the piston of the engine".

3.A) birthday candle is burnt in a watchglass with a coloured water in it. When the burning candle is covered with a beaker, the candle goes off and the water rises up in the beaker. Some children thought that this is the magic water that rises up whereas the others thought that the water rose up to put the candle out. Some children had the idea that this is the lip of the beaker that allowed the water to rise up.

FINDINGS

Characteristics Of Children’s Responses

After categorising the responses of the children, the following main points emerged:

1. Many phenomena either go by unobserved or pupils are content to accept them without explanation
You know the wind blows; tides rise and fall; the moon waxes and wanes; day follows night. They are so obvious that they don't need explanation. You do not have to explain breathing (unless you have nearly suffocated) or walking or talking. Children accept things for what they are. For example:

i. In an answer to a question "Why it was night before the sunrise"?, the children at P7 said, "because it was dark".

ii. Paraffin was poured in a dish in front of P6 children. They were asked, how does its smell reach them? They replied "because it was a paraffin".

iii. Similarly, the children just accept that a helicopter moves "because it has a battery in it"; a torch lights up "because it has a battery in it"; and an echo killer gives different sounds "because it has batteries in it".

iv. When the children were interviewed about a picture of acrobats doing an incredible feat, they considered it as a camera trick and accepted it without any further reasoning.

v. The children are not worried about the shape of the Earth whether it is round; like a crescent; like a table or like an egg.

vi. Many children were content to write that it is the button only which makes the dancing monkey, torch, and echo killer to work. They just observed the process and did not think an explanation was necessary.

vii. Many children explained the balancing of the belt on Sky Hook as saying that "it is the belt that balances the hook" or "you have put more weight on the hook therefore it is balanced".

viii. Most of the children at Secondary 1 (8th class) had the idea that in "the rising water puzzle" water rises because "jar is holding the water up".

ix. While explaining the activity "Balloon Fountain" the Secondary 2 (9th class) children explained as "one tube is slanting, it is sucking water".

2. Children have ill formed explanations for many things based upon partially digested input from formal or informal sources. A few may be self generated, e.g;
a) It becomes dark at night and light in the morning because:
Another planet goes near the Earth and then the planet goes round and then it becomes light.
It gets dark at night because the clouds cover the light. It gets light in the morning because the clouds have moved away from the Sun.

b) We can see the Moon at night because:
The Moon goes right in front of the Sun, so, the Sun’s light goes through the Moon and lights it up but not too brightly. It is very dark and the Moon is like a bulb for the whole world. It is just like looking at a lighted bulb in the dark.

c) It is warmer in the summer than in winter because:
The Sun draws nearer in summer, the cold goes away. In winter, that is at the end of the year, the world goes round slower, so the wind would blow harder and in summer the world goes faster which gathers up heat to make it warm.

d) Similarly, alternative concepts were found for the explanation of all the ten activities. For example:

Many children at Primary and secondary level explained the activity Rising Water Puzzle as “Fire was pushing water up; Candle went off because all air was steamed off”; Glass is so hot inside, it put the candle out, steam makes the water go up; Water evaporates and rises up; water was being pushed up because of the weight of the container (beaker), if beaker is removed, the candle would relight”.

3. Personal experience plays a very important role in the development of concepts. Children develop concepts from one activity and use them to explain another. Children have their own logic. For example:

a) It gets dark at night and light in the morning because;
When it is dark, you have to go to sleep because you cannot go out and in the morning you have to wake up, and can go out and go to school.
When the clouds cover the Sun, it becomes night; When the Earth gets nearer the Moon, it gets dark.
When the Sun goes up it is light in the morning and it is dark at night when the Sun goes down; When
b) Similarly, we can see the Moon at night because:
The clouds move away at night and you can see space and I (child) think the Moon is in space.
The Earth moves, the Sun and the Moon come alternately (because they do not see the moon and the sun at the same time).

c) When the children were asked, 'how does the tide happen', some children had the concept that the wind causes tides (because it is often windy at the beach).

d) A man coming out of a swimming pool is shivering with cold.
The children were more than satisfied with their everyday description that the water inside the pool is warmer than the air outside that is why he is feeling cold.

e) A girl performed the windmill activity and got the idea of moving the windmill with hot air. When she performed the Steam Engine activity, she explained it's movement as, "The hot air from the fire and the steam from the water move the wheel (piston) which moves the others". Another P6 girl developed the idea, "The reason it happened, is because the pressure of the fire pushed upwards and because of the pressure of the fire provided, the wheels turned round".

4. Children mix up description with explanation and do not differentiate while describing or explaining a process. For example in the case of convex and concave lenses:
   i. big lenses produce bigger images and small lenses produce small images. Similarly heavy and thick lenses produce enlarged images whereas thin lenses produce small images.
   ii. Writing seen through a glass slab seems to be raised from its actual level because of the thickness of the glass.

Similarly about the working of steam engine, the responses were like:

When you put the burner under the tank:
Q.i. What happened?
RESPONSES.
a. It started to burn up and water came out.
b. The spirit burnt and water came out.
c. The wheels started to move.
d. It started and made a noise like a train.
Q. ii. What made it happen?
RESPONSES
a. The wheel (piston) made it happen.

5. If, however, the children are prodded in an interview they will come up with something to please the interviewer. They are probably not serious attempts at explanation.

i. When the children at P7 (age 11) were asked about the change taking place in the size of the Moon, they responded that the sun causes these changes. One child said that the Moon is behind the sun and it moves a bit; that's how the size of the Moon changes very slowly.

ii. The children at P6 (age 11) had the concept that there is something inside the mirror which makes the image smaller or bigger. They also mentioned (another concept about the same process at the same time) that there is a glass on top of the mirror. Similarly one child said that "there is a mirror behind and a glass on top that causes the images to be different. Another child said that if a mirror has a black or silvery background (because different mirrors had different paint at the back), that will produce images of different sizes.

6. Only things that need explanation are explained:

Why were clothes? You will get cold if you don't.
Why drink? You will get thirsty if you don't.
But why images invert in mirrors or a spoon is seen to be bent in water are not important to them. They are a sort of curiosity but not really important in the business of living, for example:

a. A girl at P5 (age 9) knew much about lenses because she had an eye-sight problem. She had glasses and she knew about the effects of long-sightedness and short-sightedness.

b. A picture was shown to a group of P6 children in which a boy is sitting in a chair with his arms folded. The children were asked that, while sitting like that, could they stand up. The answer was that they could not stand up because the weight will be shifted in the front. But when the same children were asked whether they needed any kind of balance when sitting
in chairs, they replied in the negative. Similarly when they were asked whether a piece of wood lying on a table was balanced, they said, "No".

c. When the children at P7 (age 11) were asked whether they were balancing when sitting in chairs: they replied, "We do not need any balance".

7. In most of the cases, while explaining an activity, pupils settle for a statement about the beginning and one about the end. For example;

1. "When you put the burner under the tank, the steam engine moves".
2. "When you press the button, the helicopter moves".
3. "When you press the button, the torch lights".
4. "Turning the handle makes (of the hand dynamo) the bulb light up".
5. The heat makes the bubble grow.
6. In the "rising water puzzle" heat makes the water rise up.

Findings of this study also paint the picture in the same manner. The children as young as 8 years old age construct their own concepts about different phenomena.

The common characteristics of the children's alternative frameworks emerging from this study could be summarised as under:

a. Their explanations are mixture of descriptions and explanations of the activities.
b. They have ill-formed explanations based upon particularly digested material from formal or informal sources. A few may be self-generated.
c. Children form concepts from their personal experiences.
d. For many phenomena, the children do not feel any need to think about them as they just accept them. This applied particularly to the large phenomena such as changing seasons.
e. In most of the cases, while explaining an activity, pupils settle for a statement about the beginning and one about the end with almost no casual chain between them.
f. If, however, the children are prodded in an interview they will come up with something to please the interviewer. They are probably not serious attempts at explanation.

g. Only things that need explanation are explained.

The teacher occupies a central and crucial place in formal Education system i.e. *face to face contact*. Nobody can deny the importance of interaction of Teacher and the students and among the students in a teaching learning process. Even in this study, the picture is painted with many colours. Such a teaching learning (formal) situation has all the facilities i.e. Qualified teachers, printed material, teacher explanations, students guides, A.V. aids and peer interaction among groups. Furthermore, most of students in these formal institutions come from (in most of the cases) similar socio-cultural background whereas in distance education system, the clientele covers a wide-range of socio-cultural backgrounds, psychological experiences and multitude settings and circumstances they are living. In addition to wide regional dispersal, difference in age groups and a very large variety of occupational experiences and unique needs and interests of individuals also pose serious challenge for meeting the different needs of individuals in an effective manner.

Furthermore, the distance education system minimises the face to face contact: The students have to prepare the assignments themselves through reading material. This state of affairs warns that in a distance education system, the teachers of AIOU need special training for writing units; explaining concepts and terminology; preparing assignments and for paper setting etc. It becomes more essential and crucial in a situation when AIOU has been drawing its personnel mostly from the formal education system. It is desirable that they are provided intensive orientation in distance education to enable them to perform their functions more effectively.

References


BOOK REVIEW

A DICTIONARY OF GEOGRAPHICAL TERMS

Compiled by Nubla Pirzada
Pages 201; 1998; Price Rs.70/= (P.B)
Published by National Language Authority, Cabinet Division,
Govt. of Pakistan, Islamabad.

Geography is a dynamic subject. It is absolutely the science of the earth surface, form, physical features, natural and political divisions, climate, productions, populations, etc. This empirical discipline discusses in detail the huge mountains presenting their own kind of natural beauty. It tells about the darkest clouds coming down from the heaven and filling the valleys below. It scans the sun rising behind a tall pine tree and spreading all around its glimmering glow. It particularizes the panoramic scenes. It explains about the quiet stream and evergreen forest. It extensively narrates the vast sandy beaches and describes the flowing blue water of the ocean. Thus, this discipline can be said a comprehensive study of the nature.

Geography is not a new subject just like website. It was founded more than 2000 years ago by the Greeks. Even the Muslim philosophers were much interested to probe deep into the nature of the earth and its relationship with the universe. They made tremendous advancement in the subject, since they were fully aware of geography. The significance of this subject has been described vividly by a famous geographer AL-MAQADISSI in the middle of 10th century A.D. He goes on to say:

"I thought it expedient to engage in a subject, that is geography, comprising a description of deserts and seas, the lakes and rivers, famous cities and noted towns, the roads and high ways of communication, the places of growth and production of exports and staple commodities, an account of the inhabitants of different countries as regards the diversity of their languages and manner of speech, the hills, plains and mountains, the limestones and sandstones, the thick and thin soils, the lands of plenty and fertility — and the various states and their boundaries."
If we go through the history, we could easily find that this very subject was all important one for travellers and merchants. The princes and noted personages, the judges and lawyers and even the commoners of old days had a keen desire to learn much about geography. So vast the subject is and so important its scope seems.

In the modern age, we have done little about the advancement of this discipline. It is an irony that most valuable books have been penned down in European languages. Due to tremendous development in this discipline, a number of terminologies have been coined. Urdu, the national language of Pakistan has not developed the taste of the masses for this very important subject. We have been lagging behind in explaining the terminologies of this subject. While living in a global village, we have failed to coin appropriate words pertaining to geography. Thus, there appears a vacuum all around.

In this pathetic background, one is pleased to see a dictionary of geographical terms containing not less than three thousand words. A miracle indeed. And this has been done by a lady of scholastic manners. Being M.Sc in Geography, Nubla Pirzada has been able to compile most comprehensively this dictionary. She has taken pain to pen down each and every word, used in the field of geography all over the world. And thence, she has skillfully coined very appropriate Urdu words which show her command over both the languages. This compilation will prove to be of much importance not even for geographers and students, but may come as delight for commoners and men of rank.

The credit also goes to Mr. Iftikhar Arif, a noted poet and the Chairman of National Language Authority who has devised the pipelines for presenting such informative books containing scientific terminologies. I sincerely hope, he would take further necessary steps to bring out such informative compilation in such a period which has been engulfed with the rays of information technology.

Dr. Mahmudur Rahman
Editor
BOOK REVIEW

An Excellent Example of Oratory
*Rhetorical Flame (Shola-i-Guftar)*

By Muhammad Munir Afzal,
Published by Islamic Publications (Pvt.) Ltd;
Lahore
Pages: 143; January 2000; Rs.100/= (H.B)

Public speaking is an art. It has far-reaching effects on the audience. The speaker through his excellent oratory, can mould the minds of the million people. At the time of crisis, the orator can lead the nation towards the real goal. As such, speech appears to be much powerful than other mass media.

It is said, speakers are born just like poets, and seldom made. Some speakers possess natural aptitude for good and impressive speech, and even when they speak extempore, their speeches have all the propriety and elegance of the most studied and elaborate composition.

Such qualities of an excellent orator may be found in Munir Afzal, who has come along with a collection of his speeches entitled *Shola-i-Guftar*. Having thirteen discourses and discussions on vast and varied subjects, this book becomes a source of inspiration for those persons who are keen to have command on public speaking.

Munir Afzal has the privilege of addressing a number of gatherings comprising college and university students. With his excellent accent and descent sound, he has always performed successfully the delicate business of oratory. He had conveyed to the audience varying ideas, feeling and emotions on different occasions most convincingly. Undoubtedly, Mr. Munir has trained his mind and voice in the art of thinking and speaking, and as such he has always won the applause of the audience. He has attained this success because he is gifted with sweetness, beauty, force and flexibility in his voice. Moreover, the matter selected for his speech is convincing and relevant to the topic in hand. Even fact, argument, theory and examples strengthen the whole chain of his thought. The manner in which he has put the matter before the audience is logical, emphatic and passionate.
Such excellent collection of speeches will prove to be a guide-book for those students and commoners who intend to express their ideas before a huge gathering. Comprising a number of valuable topics, this book will provide a training stage for a novice just commencing to learn public speaking. The collection under review has been published in very decent way.

Dr. Mahmudur Rahman
Editor
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### PROVINCE-WISE AND SEMESTER-WISE STATISTICS OF TUTORS FROM SPRING, 1997 TO SPRING, 1999.

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### PROVINCE-WISE AND SEMESTER-WISE STATISTICS OF STUDY CENTRES FROM SPRING, 1997 TO SPRING, 1999.

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### RADIO/TV PROGRAMMES PRESENTED FROM AUTUMN, 1997 TO SPRING, 1999 SEMESTER

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### RADIO/TV PRODUCTION AND AUDIO/VIDEO CASSETTES SALE DURING JULY, 1997 TO DECEMBER, 1999

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