REPORT OF THE WORKING GROUP
ON
EDUCATIONAL TECHNOLOGY
AND
DISTANCE LEARNING FOR THE
7TH FIVE-YEAR PLAN
(1985-1990)

I N D E X

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1. INTRODUCTION

1.1. The Planning Commission set up a Working Group on Educational Technology and Distance Learning for the Seventh Five Year Plan under the Chairmanship of Prof. Rais Ahmed, Vice-Chairman, UGC. The composition and terms of reference of the Group are at Annexure-I.

1.2. The Group held three meetings on 5.12.83, 28.12.83 and 30.1.84. At its second meeting the Group set up a Drafting Committee to prepare its report. The composition and meetings of the Drafting Committee are at Annexure-II. At its third meeting on 30.1.84 the Group considered and finalised the report. The list of participants at the three meetings of the Working Group are at Annexure-III.

1.3. The Group discussed the scope of educational technology, its role in improving the existing system of education and widening access to education, the various possibilities of using educational technology, particularly the mass media, for educational purposes, the priorities and target audience, the need to prepare relevant software in large quantity, the importance of continuous feedback and evaluation, provision of receiving facilities and making appropriate arrangements for their maintenance.

It was emphasised that in view of the need for developing different kinds of software, its production should be on a decentralised basis involving various governmental and non-governmental organisations, schools, colleges, universities and teachers

1.4. In July, 1977 the Union Cabinet approved the proposal for an Indian National Satellite System (INSAT), with the full range of tele-communication, meterology and TV broadcasting capabilities and corresponding ground segment for tele-communication and meterology. The ground segment for utilising the INSAT TV and radio facilities was approved by the Cabinet only in July, 1981. The States of Andhra Pradesh, Orissa, Gujarat, Maharashtra, U.P. and Bihar were to be covered by the programme in the first phase. The large investments in setting up the TV ground segment and the production facilities necessary to feed the satellite was approved primarily because it would be possible to carry education to the rural communities in far flung and backward areas of the country. The Sixth Five Year Plan document emphasised the importance of educational technology for greater efficiency and effectiveness and wider reach of the educational programmes. The possibility of using modern

technology to take education, especially at the
elementary stage, to all sections of population in
a shorter frame of time has to be capatulized for
achieving minimum basic education of all people
within a decade.

2. CONCEPT OF EDUCATIONAL TECHNOLOGY

Application of educational technology in the
Indian context must be based on greater understanding
of its meaning and scope. Its wider application
must be seen in the context of learning; development
of audio-visual instructional materials; teacher
training; educational broadcasting; evaluation;
information dissemination; research and experimenta-
tion with new ideas; and management of educational
systems and sybsystems. Educational Technology must
be looked upon as a total system to tackle educa-
tional problems rather than mere application of
new technology. Undoubtedly, technology must be used
to reach a wider cross-section of people with quality
education, but its expansion and utilisation requires
that the hardware infrastructure be built for
producing appropriate quality software. Educational
Technology is the scientific management of human
and material resources with appropriate technological

inputs. The process of Educational Technology also requires planning the educational system or sub-system on the basis of questions such as :

   (i)   Education for WHOM?

  (ii)   Education with WHAT OBJECTIVES?

 (iii)   PAST EXPERIENCES of the system?

  (iv)   What MEANS or APPROPRIATE METHODS ARE possible to deploy as human and non-human resources?

   (v)   What ADVANCE PREPARATION is needed in terms of budget, personnel, training, development of instructional material and setting up of the infrastructure?

  (vi)   What ORGANISATIONAL FRAMEWORK, MANAGEMENT and MONITORING SYSTEMS are needed to achieve the educational objectives?

 (vii)   What TARGETS are possible to achieve realistically?

3.   BACKGROUND

3.1.   Government's interest in improving the quality of education by the use of technological aids and devices goes back to 1947 when the audio-visual scheme was included in the educational development plans. It had the limited objective of promoting

the use of educational films and other projected and
non-projected aids. As a result of this effort
audio-visual units and state film libraries were
set up in almost all the States. At the Centre a
Central Film Library was set up in the National
Institute of Audio-visual Aids.

3.2. In 1971-72 the Educational Technology Project was
launched with a view to stimulate the use of tele-
vision as well as other instructional media, notably
radio and film, to improve the quality of education.
Under this project a Centre for Educational Techno-
logy (CET) was set up in the NCERT and Educational
Technology Cells (ET Cells) were established in 21
States in a phased manner. The programme aimed at
finding alternative methods to achieve the goal of
educational policy.

3.3. Experience with the Satellite Instructional Tele-
vision Experiment (SITE) in 1975-76 established the
potential of satellite broadcast television by
showing that it is possible to reach effectively,
and at low cost, very large number of school
children, adults, teachers and extension workers in
remote areas where communication and educational
facilities were inadequate.

3.4. The experience with SITE was carried further in the use of radio broadcasts for primary schools and teacher training. Teacher training programmes are being organised through radio and support material in several States. Radio broadcasts are also being used for improving primary education.

3.5. In order to carry these achievements further and to consolidate the impact of the programme, the ET/Cells are being considerably strengthened under an expanded educational technology scheme. Under this scheme central assistance is being provided for setting up reprographic and still photographic facilities and some sound and video recording equipment for experimentation in production of programmes for training purposes at the State level.

3.6. In the context of INSAT the Ministry of Education has decided that the responsibility for the production of educational television programmes will be gradually taken over from Doordarshan. In order to implement this decision programme production centres are being set up in the State Institutes of Educational Techno- logy (SIET) of the 6 INSAT States in a phased manner. A Central Institute of Educational Technology (CIET) is being set up in NCERT by merging and strengthening

the existing Centre for Educational Technology and Department of Teaching Aids (formerly known as National Institute of Audio-Visual Aids). The CIET is presently producing ETV programmes which are being transmitted via INSAT in selected districts of Andhra Pradesh and Orissa. Once the SIETs become operational they will produce programmes for their respective States.

3.7. The University Grants Commission also attaches high importance to the use of educational technology for improving the standards of higher education and making it accessible to those who cannot benefit from the formal system. The UGC proposes to utilise one hour transmission time available through INSAT-IB for higher education. Audio-Visual Research Centres and Educational Media Research Centres are being set up at Jamia Milia Islamia, New Delhi, Universities of Poona, Ahmedabad, Osmania and Roorkee and Central Institute of English and Foreign Languages. Two more centre are likely to come up during the current year.

3.8. India has developed a large infrastructure of communication technology. A large network of transmitters are planned to beam TV programmes

through low power transmitters and series of INSAT
satellites. Equipment for photography, reprography,
sound, video equipment are being assembled and
indigenously produced in the country.

4.   PRIORITIES AND TARGET AUDIENCE

4.1. Some of the priorities in education are as follows:

   (i)   Universalisation of elementary education
       - both formal and non-formal;

  (ii)   Non-formal education for adults;

 (iii)   Development of vocational and professional
       training programmes;

  (iv)   Diversification and improving quality of
       and access to higher education;

   (v)   Disseminating general education about
       national issues (such as socialism,
       secularism and national integration),
       developmental problems (such as population
       education, conservation of nature, etc.)
       moral values including the scientific
       temper.

  (vi)   Equalization of educational opportunities
       to handicapped and weaker sections;

 (vii)   Teacher orientation and training programmes
       from the elementary to the university level

4.2. Within these priorities the target audience becomes:-

  (i) The children of age 6-14 years;

  (ii) Secondary level students;

  (iii) College and University students;

  (iv) Out-of-school and out-of-college youth, including housewives;

  (v) Handicapped children;

  (vi) Illiterate and neo-literate adults;

  (vii) Parents and public at large;

  (viii) Teachers at all levels;

  (ix) Educational Planners and Administrators.

5. EDUCATIONAL TECHNOLOGY AND ITS APPLICATION

5.1. In a developing country as India there is going to be perpetual need to evolve appropriate communication technology and its total system to entertain, to inform, to provide skills, to educate the people to enable them to realize their potential and contribute towards national development. This requires identification of target audience and a systems design to mobilize human and non-human resources.

5.2. For example, for large number of primary schools, it may be relevant to provide low cost school building, proper chalk and blackboard, trained teachers and books. For schools where radio

receivers can be provided, it may be desirable to
make programmes at the State level on language(s)
and music for children. This requires providing
the following :-

(i) Modest sound studio facilities at the
State level to produce educational
programmes;

(ii) Training to staff - technical, software,
production, evaluation and management;

(iii) Rugged battery/electricity operated
radio sets to each school;

(iv) Maintenance and battery costs to school;

(v) Integration of broadcast with school
curriculum.

In a similar way, the various elements of Low Cost
Aids, Projected Aids, Television & Films can be
worked out.

5.3. However, all technology may not be within the reach
of all schools. For primary schools without
electricity it may be sufficient to ensure provision
of chalk, blackboard, school building and some low
cost teaching aids. For high schools facilities of
filmstrips, slides, radio and audio cassette recorder
may considerably add to the quality of instruction.

For teacher training institutes it may be necessary
to use radio, TV, film projector, overhead projector,
etc. to strengthen the teacher training programme
at the elementary and secondary level. In other
words, educational priorities for the target
audience may indicate the appropriate technology
and its wide spread applications.

6. HARDWARE REQUIREMENT

6.1. If the educational institutions have to benefit
from the use of educational technology it is
necessary that a machinery be set up for producing
subsidised equipment for schools. At present
the schools do not even have the basic/laboratory equipment for
teaching subjects like physics, chemistry, etc. It
is necessary that science kits, demonstration
aparatus, slide projectors and other audio visual
hardware is produced in large quantities and
provided to the schools at subsidised rates. In a
large country like India this will have to be done
on a decentralised basis. To begin with atleast
four regional centres may be set up for this purpose.
Such centres will have to be financially supported
by the Central Government so that all schools are
provided with science kits costing about Rs. 500 for
the primary level and Rs. 2000 for the secondary level.

6.2. An International Centre for Science and Technology Education is being set up by UGC. There is an urgent need to strengthen science education/all levels and to inculcate the scientific temper among the people. It is, therefore, necessary that the proposed Centre be made functional as early as possible. This centre would provide the necessary expertise fo. lucing programmes on science and technology educ. .on.

6.3. Radio broadcasting is available almost throughout the country. By the end of the Sixth Plan, television coverage will also expand to about 70% of the country. These media of mass communication are already being used to a limited extent for educational purposes. If they are to be used in a big way for improving the quality of education and widening access to education it is necessary that a seperate channel is available for educational purposes. This will enable educational programmes to be broadcast at times convenient to the educational institutions.

6.4. A major bottleneck in the systematic utilisation of radio and TV for education is the non-availability of listening/viewing facilities in the educational

institutions. Whereever such facilities are available
there is no proper maintenance arrangement. It is,
therefore, necessary to provide listening/viewing
facilities to all educational institutions so that
the potential of radio and TV can be exploited to
the fullest possible extent. Appropriate maintenance
arrangments on a decentralised basis also need to
be made.

7. SOFTWARE PRODUCTION

7.1. While hardware technology for communication has
reached the country, the production of quality
software on different media has yet to develop
in large proportions in different languages suited
to the various regions of the country. This
requires creation of regional facilities of graphics,
still photography, radio and TV production which
is already underway. The thrust of the Seventh
Plan may be/develop a cadre of software educational
producers who would undertake the production on
different media for different target audience.
Infrstructure created at the national level (UGC,
NCERT) would serve very well as a base for training,
consultancy, production and coordination required
by the Universities and SCERTs and for further
development.

7.2.   State Institute of Educational Technology should
be set up in all States/UTs with necessary facilities
for low cost teaching aids, graphics, still photo-
graphy, radio and TV programme production, etc.
Such institutes are already being set up in the
6 INSAT States for producing ETV and radio programmes
for all levels of education. The ET Cells in the
other States are being strengthened with similar
facilities. It is expected that by the end of the
Sixth Plan SIETs will be fully functional in the 6
INSAT States. An additional five States would have
set up the facilities for graphics, still photography
and radio production. In the Seventh Plan therefore,
it will be necessary to continue financial support
to these 11 States for upgrading their facilities
and in addition set up SIETs in the remaining States,
U.Ts. This is essential as the software for primary
and secondary schools has to be in the mother tongue/
local language. Production facilities are, therefore
required for 16 languages in addition to English.
The Hindi speaking States could have common
facilities, but in view of the large area and local
variations, the programme requirements would be
enormous. It is, therefore, necessary that an
STET is set up in each State/U.T. The SIETs should

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interact very closely with educational institutions
with whose help alone they train and produce in the
variety of subject and languages needed. As far as
production and training for the sector of higher
education is concerned, the centres should best be
in the universities, and in addition to the six
now underway, at least another 6 to 8 will have to
be established.

7.3. Since the low power transmitters are going to have
facilities for broadcasting a recorded programme, it
would be most appropriate to involve colleges in the
concerned cities in undertaking some programme
production for educational purposes in simple formats,
programmes for different target groups with specific
needs, and based on local themes, culture and
expertise. Benefits of this particular feature of
the mass media could be very far reaching for
educational and national development.

7.4. In order to raise student grasp and appreciation of
the subjects they learn audio-visual self-learning
modules and video programmes have to be provided in
the University libraries. At least 25% of the
libraries should have a minimum of such material
and related viewing facilities.

7.5. An educational film production unit has been provided in CIET which is likely to become operational in the Seventh Plan. Films have the dual advantage of being shown through TV as well as on projectors in schools, colleges and teacher training institutes. It is, therefore, necessary that educational films are available in large numbers. It will not be possible for one film unit to cater to the needs of the entire educational system. It will therefore, he necessary to set up another film production unit perhaps in the Eighth Plan period. Though the cost of producing a film is large, it is offset due to its dual advantage. Also, the topics of the films should be such as will continue to have relevance over a long period of time. Films can also be easily dubbed in several languages and made available in the local language at low cost.

8. SPECIFIC INPUTS

The following inputs will be necessary during the Seventh and subsequent Five Year Plans in the States/UTs. They will, however, be effective in improving the quality of education and widening access to education if the schools are provided the basic infrastructure of building, teacher, chalk, ~~~~~~~ ~~~ ~~~~~~~ and electricity.

8.1. LOW COST TEACHING AIDS

The NCERT has developed considerable expertise in the development of low cost teaching aids with material available in the local environment. These teaching aids, if used effectively, can make instruction interesting and attract the children to school. It is necessary that teachers be trained in the production and use of low cost teaching aids. For this purpose workshops should be organised in each district by the respective State/UT Government. The NCERT may organise workshops for training teacher trainers who would in turn organise similar workshop at the district level. In order to involve outstanding teachers in innovating low cost teaching aids it may be necessary to give them small grants and also disseminate information to the teaching community. A sum of Rs. 2.50 lakhs per year may be provided to each States/UT for this purpose. The total cost would be about Rs. 387.50 lakhs (Table-I).

8.2. GRAPHIC AIDS

Graphic aids, such as charts, maps and still pictures, are necessary for elementary and adult education and need to be developed at the state level.

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They can be used without any hardware. Reprographic
and commercial art facilities may be required for
such software development. These have already been
provided under the revised ET Scheme and it is
likely that at least six states will set up these
facilities in the 6th Plan. The remaining states/
UTs may be provided similar facilities. The total
cost involved would be about Rs. 5,234.75 lakhs
(Table-II).

8.3. <u>PRODUCTION OF RADIO PROGRAMMES</u>

At present about 90% of the country is covered
by radio. Since the last 40 years radio broadcasts
are being used for educational purposes. The
initiative for this has so far rested with the media
authorities. The involvement of the educational
authorities in the systematic utilisation of radio
for education has been peripheral. With the setting
up of ET Cells in the States there was some
collaboration between the Education Departments
and AIR in planning the production and utilisation
of radio broadcasts. The impact of radio broadcast
on education has, however, been negligible in view
of the fact that the educational authorities have
taken little or no interest in utilising the

facilities in a systematic manner. There is no
infrastructure available in the State Education
Department to plan the radio programmes and
coordinate with AIR for working out the programme
schedule preparing support material, etc. Receiving
facilities are also not available. Only about
1.20 lakhs schools through the country have radio
sets. There is, therefore, an urgent need to
provide receiving facilities to the schools.

If radio broadcasts are to have an impact
it is necessary to plan them systematically and
ensure their utilisation. The development of
software for radio should be taken over by the
educational authorities and production of programmes
should be at a decentralised level. Such a decision
has already been taken in the context of INSAT in
respect of ETV programmes. Sound studios will,
therefore, have to be set up in each State/UT.
In the 6 INSAT States sound studios are already
being set up under the INSAT for Education Project.
The revised ET scheme also provides for a small
sound studio for purposes of experimentation in
programme production and training. If the State
Governments are to take the full responsibility for
production of educational programmes it will be

necessary to set up a full-fledged sound studio.
It would cater to the needs of all levels of
education from primary to university and adult
education. Evaluation and feedback would be an
in-built part of the production process. The
total cost of setting up one sound studio is
approximately Rs. 40 lakhs. The recurring cost
over a five year period will be Rs. 36 lakhs. The
detailed costing is at Table-III . In order to
ensure that the programmes produced are utilised,
it is necessary to provide receiving facilities
to all the schools in the country. This will also
make possible the evaluation of the programmes.
There are at present 6,20,000 middle and primary
schools, 55,000 secondary and higher secondary
schools and 5,500 colleges in the country. The
radio programmes will generally be broadcast to
the schools during the school hours. There may,
however, be instances when suitable radio time is
not available when it would be necessary to
transfer the programmes on audio cassettes for use
at a later date. In the case of colleges and
universities self instructional material should be
prepared on audio tapes which should be available
for use in the libraries. It is not possible for

the school system to provide receiving facilities
because of constraints of resources and because
the State Governments are not convinced of its
utility. If radio braodcasts have to be utilised
systematically and regularly in the schools, central
assistance must be provided for purchase of radio
sets to the primary, middle and higher secondary
schools. In the case of colleges and universities,
receiving facilities may be purchased from their
own funds. The cost of providing radio sets and
their maintenance will be about Rs. 2,430 lakhs
(Table-III). An important requirement is the
proper and timely maintenance of the receiving
facilities. An appropriate machinery for maintenance
of radio sets should be arranged by the State
Government.

8.4. PRODUCTION OF T.V. PROGRAMMES

Television facilities in the country have expanded
considerably with the availability of INSAT and
the setting up of low power transmitters. In
addition, Doordarshan is expanding the coverage
through its terrestrial transmitters. By the end
of the Sixth Plan it is expected that about 70%
of the population will be covered by television.

Under the INSAT for Education Project, programme production centres are being set up in the 6 INSAT States. To begin with they will cater to the needs of elementary education and teachers training. After they become fully operational the will meet the requirements of all levels of education. The building for the production centre will be ready only by the end of 1985. They will, therefore, become operational only during the Seventh Plan. Financial support to the six INSAT States for setting up and maintaining the production centres must continue till the end of the Seventh Plan as it will not be possible for the State Governments to take over their responsibility in the middle of the Plan period.

The utilization of educational TV programmes is dependent upon the availability of TV sets in the school. At present only the Ministry of Information and Broadcasting is providing a limited number of sets for community viewing in the INSAT States. The number, however, is too small to justify the large investment in setting up the ground segment for transmission and programme production. For optimum utilisation of the programmes TV sets should be provided to a

schools. In view of the constraints of resources
on the part of the State Governments, it is
necessary that Central assistance be provided for
this purpose. The responsibility of the State
Government will be to set up an appropriate
maintenance infrastructure to ensure regular
functioning of the TV set. In addition, the
State Government will have to provide regular
supply of electricity, proper roads to ensure
maintenance, appointment of TV custodians and
regular payment to them. /TV sets may be provided
to only those schools which have electricity
(about 60%). The cost of providing TV sets and
their maintenance will be about Rs. 6,325 lakhs
(Table-IV).

/In the
absence of
reliable
battery
operated
makes,

During the Seventh Plan period, in addition
to the on-going schemes, production centres may be
set up in another eight States. This will ensure
that production facilities are available in all the
major regional languages.

The total cost of setting up one TV studio is
approximately Rs. 240.00 lakhs. The recurring cost
over a five year period will be Rs. 53.00 lakhs
approximately. The detailed costing is at
Table-IV).

The Audio Visual Research Centres and
Educational Media Research Centres being set up
by UGC in six universities will need to be supporte
during the Seventh Plan. The approximate
expenditure will be Rs. 65.00 lakhs per year.

Since the low power transmitters will have
the facilities for broadcasting recorded programme
it will be necessary to involve a large number of
colleges and institutions in the production of
programmes based on local needs. About 25 centres
may be set up for producing such locally relevant
programmes. The cost of each centre would be
about Rs. 5.50 lakhs.

In order that the universities can take
advantage of the large amount of software that wil
become available it is necessary that each
university be provided a library of software with
VCR facilities for playback of the programmes.
To begin with atleast 50 universities should be
provided with such libraries. The cost of equippl
each library will be about Rs. 0.70 lakhs.

The total cost of software production and
utilisation of TV facilities is given in
Table-IV .

8.5. OPEN SCHOOL FOR SECONDARY LEVEL STUDENTS

The Central Board of Secondary Education, New Delhi has started an Open School for secondary level students. The Open School is presently functioning from Delhi with facilities for taking the courses in English and Hindi only. In order that the courses are available in the regional languages, it is necessary to start Open Schools in all the States. This would facilitate the organisation of contact programme also. To begin with, however, only four such centres may be set up during the Seventh Plan period.

At present the courses of the Open school are available through the medium of print alone. In order to make the courses more interesting and for giving special information, radio and TV inputs would be necessary. The Open School is primarily meant for backward/weaker sections of the society who are unable to attend the formal school due to various reasons. Since radio sets are now widely available, some radio input could be provided for the Open School. The Open School should collaborate with CIET and SIETs for identifying the areas where radio inputs would be useful and for producing the

programmes. TV programmes for the Open school
could be started at a later stage when TV reaches
all homes and is within the reach of the students.
Programmes on some professional/vocational courses,
which would be of general interest, could be started
in the initial phase.

For the running of the Open School at New Delhi
and in four additional states Rs.20 lakhs may be
provided for each per year. (Table V)

8.6　　OPEN UNIVERSITY

In order to meet the educational needs of vari
categories of people it is necessary to start an Op
University for teacher training, continuing
education, training of public sector and government
staff for new jobs, vocational courses, etc. Taking
into consideration the needs of the country as a
whole and the specific requirements of the area,
the subjects on which courses would be started
could be worked out. Since the educational needs
will be very wide ranging it will be necessary to
produce a large number of programmes. The producti
of programmes could be undertaken by the State
Production Centres as well as the University centi
In addition, it will be necessary to get programme

made on contract basis. For setting up an Open
University and the production of a wide range of
software, the appropriate cost will be Rs.500 lakhs
per year. (Table VI).

8.7   EXPERIMENTATION WITH HIGH TECHNOLOGIES

In order to keep pace with the fast expanding
technologies in the world, it is necessary to use
high technologies for education as well. Computer
aided instruction, teletext and slow-scan broadcasts
can be fruitfully used for educational purposes as
has been done in several developed countries. To
begin with these should be used on an experimental
basis in CIET and one or two States.

Recognising that computer literacy will be
crucial in preparing our school children to cope with
the micro-computer revolution which is sweeping the
world, and which has the same potential for social
and industrial development of the country as the
industrial revolution , the Deptt. of Electronics has
drawn up a pilot project for Computer Literacy and
Studies in Schools (CLASS). The programmes is being
implemented in close collaboration with the Ministry
of Education on a pilot basis initially in 250
secondary schools throughout the country. The project
will be implemented during the academic session

1984-85. The computer literacy course will be
open to students of all disciplines irrespective
of their ultimate branching so that problems if any
in introducing the subject to students of different
streams would be known during the implementation
of the pilot project. For each cluster of schools
a resource centre has been identified for providing
the logistic, academic and teacher training support
to the schools. The maintenance of the computer
system will be the responsibility of the Computer
Maintenance Corporation. The NCERT has designed
an appropriate curriculum for teachers and students
for the pilot project. The training of teachers is
being organised at selected resource centres.

On the basis of the evaluation of the pilot
project a decision will be taken about the extent
of expansion of the computer education project
during the Seventh Plan. However, keeping in view
the need to equip our children to cope with the
demands of a developing society it is necessary th
computer education be introduced in all secondary
schools throughout the country. However, to begin
with the programme may be introduced in atleast
10,000 secondary schools during the Seventh Plan
Period. The total cost of equipping 10,000 schoo

with computer systems, preparation of course
material for students and teachers, prganisation
of teachers training, etc. will be approximately
Rs. 4,250 lakhs. The detailed phasing over a five
year period may be seen in Table VII.

9.   TRAINING REQUIREMENTS

9.1.   At present facilities for training in different
areas of educational technology are available in
a limited number of institutions e.g. SAC, FTII,
NCERT, AIR Staff Training Institute and IIMC.
In NCERT alone the training is specifically
oriented towards education. In the other institutions
the training is in mass communication generally
and not specific to the needs of education.

9.2.   In order to meet the training requirements, both
hardware and software, for setting up a production
infrastructure in each State/UT, the training
institutions need to be considerably strengthened.
Seperate departments for training in Educational
Television, Education al Radio, etc. should be started
in the existing institutions. The NCERT is being
strengthened to some extent to meet the training
requirements under the INSAT Project. Its facilities
will need to be considerably enhanced if it has to

take the responsibility of training people from the
software and hardware side from all States/UTs. The
Universities should also start graduate & post-
graduate courses in different areas of educational
technology so that trained manpower is readily
available for setting up production facilities in
the States. Emphasis should be given on training in
the development of appropriate software.

10. HARDWARE MAINTENANCE ARRANGEMENTS

10.1   One of the major bottlenecks in the regular
utilization of audio visual aids, radio and TV
programmes in the educational system is the lack of
proper maintenance facilities. Funds are not avail-
able with the schools even for minor repairs of rad
sets, projectors, etc. For maintenance of TV sets
Doordarshan is presently responsible. However, wit
the expansion of TV facilities it will not be feasi
for Doordarshan to continue to handle this work. F0
expeditious repair and maintenance it is absolutel
essential that this responsibility   be taken o
by the State Governments.

10.2   If the investment in the various inputs stat
para 8 above are to be fruitful there must be reg
utilisation of the programmes. This will be poss

only if the receiving facilities function regularly
and are properly maintained. This implies not only
maintenance but also regular supply of electricity.
It is, therefore, imperative that each State/UT
should set up a Maintenance Cell to take care of
these matters. The repair of equipment should be
either entrusted to local commercial agencies or
the Maintenance Cell will need to have Units at the
District level. It would be preferably if maintenance
arrangements are made with commercial agencies.

11.   ## TRAINING OF EDUCATIONAL PLANNERS & ADMINISTRATORS.

For the success of the educational technology
programme it is necessary that educational planners
and administrators be suitably oriented to different
aspects of educational technology. They must be
informed about the requirements of the different
programmes and how they can be effectively used
for improving the quality of education and widening
access to education. A correspondence course should
be started for this category of persons with radio
and TV input where possible. The NIEPA may be
entrusted with this responsibility. The training
course could be planned in consultation with NCERT.
About Rs. 10 lakhs per year would be required for
this programme (Table-VIII).

12. CONCLUSION

12.1. If the potential of educational technology has to
be fully exploi-ted for improving the quality of
education and widening access to education the
necessary infrastructure has to be created. The
allocations for education must, therefore,
increase substantially. The investments in INSAT,
LPTs and the radio network which have extended
communications to remote areas cannot be justified
if they are not utilised for educational purposes.
The investments made in different sectors like
agriculture, industry, rural reconstruction, etc.
will bear fruit only if trained manpower is
available. The educational requirements for each
sector should be reflected in the budget of the
same sector. Large investments in education are
very essential if the investments in other sectors
are to be productive.

12.2. Educational Technology is not mere application of
hardware technology. It must be seen as a process
to design a total system where the weakest element
determines the output quality and effectiveness.
Adhoc planning to imagine immediate returns and
spending on hardware can be counter productive

to the extent of damaging the already existing
educational system. The priorities, the target
audience, the educational objectives, analysis
of the existing system, training to produce
software producers have to be taken into account
in designing a realistic system from the point
of view of cost and time to ensure long term
effectiveness.

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Working Group on Educational Technology & Distance
learning for the Seventh Five Year Plan (1985-90)-
Composition and Terms of Reference.

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The Composition of the Working Group is :-

1. Prof. Rais Ahmed,
    Vice-Chairman,
    University Grants Commission,
    Bahadur Shah Zafar Marg,
    New Delhi.   ..... Chairman

2. Prof. M.R. Bhide,
    Coordinator
    School of Multi Disciplinary Studies
    Department of Physics
    Poona University, Pune-411007.   ..... Member

3. Prof. E.V. Chitnis,
    Space Application Centre,
    Ahmedabad - 380053.   ..... Member

4. Shri M.M. Chaudhri,
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    Department of Teaching Aids,
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    Senior Research Officer,
    Education Division,
    Planning Commission,
    Yojna Bhavan, Parliament Street,
    New Delhi.   ..... Member

6. Prof. R.C. Das,
    Principal,
    Centre for Educational Technology,
    N.C.E.R.T., Sri Aurobindo Marg,
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7. Dr. P.C. Joshi,
    Director
    Institute of Economic Growth,
    University Enclave,
    Delhi - 110007.   ..... Member

8. Prof. S.R. Joshi,
    Software Systems Group,
    Space Applications Centre, SACPO
    Ahmedabad - 380053.   ..... Member

9. Prof. Anwar Jamal Kidwai,
Vice-Chancellor,
Jamia Millia Islamia,
New Delhi - 110025.   ..... Member

10. Smt. Vijay Mulay,
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Research Projection
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12. Prof. Ashok Chandra,
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Department of Electronics,
Lok Nayak Bhavan, Khan Market,
New Delhi - 110003-   ..... Member

13. Prof. T. Subba Rao,
Principal, T.T.T.I.,
Madras.   .....Member

14. Shri Shailendra Shankar,
Director General,
Doordarshan, Mandi House,
New Delhi.   ..... Member

15. Miss M.S. Shah,
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State Institute of Education,
Raikhad, Ahmedabad.   ..... Member

16. Prof. Yash Pal,
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New Delhi.   ..... Member

17. Shri P.K. Patnaik,
Joint Secretary (Schools),
Ministry of Education & Culture,
Shastri Bhavan, New Delhi.   ..... Co-opted Member

..... 3/-

18. Dr. T.N. Dhar
    Joint Director
    N.C.E.R.T.,
    New Delhi.   .... Co-opted Member

19. Dr. R.P. Singhal,
    Consultant,
    NIEPA, New Delhi.   .... Co-opted Member

20. Shri H.R. Sharma,
    Director,
    Open School,
    Green Park Extension,
    New Delhi.   .... Co-opted Member

21. Mrs. Renuka Mehra
    Under Secretary
    Ministry of Education & Culture
    Shastri Bhavan, New Delhi.   .... Convenor &
                                                 Member Secretary.

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2. The terms of reference of the Working Group are as follows :-

(i) To take stock of the position in respect of the sector of education as is likely to be reached by the end of 1984-85; to identify problem areas and suggest remedial measures;

(ii) To suggest a feasible perspective of development upto 2000 AD particularly with a view to equalising educational opportunities for all sections of the people and to enable the national education system to make its maximum contribution to the development of a modern society;

(iii) To specify in clear terms the objective of educational development programmes in relation to /the national development goals as well as /_ inculcation of an appropriate value system, enrichment and propagation of the diverse Indian culture and the promotion of national Integration;

(iv) To make recommendations regarding policies and programmes for ensuring the availability on an adequate scale of inputs, particularly suitably qualified teachers, functional buildings, scientific equipments, libraries, etc. in the concerned sector of education;

(v) To examine in detail the several aspects of making education relevant to developmental needs and to enhance the employability of the educated with particular reference to the need to develop extensively usable skills among the people;

(iv) To take note of innovative measures and opportunities to improve the existing facilities and facilitate low-cost alternatives to achieve various specified goals and objectives and educational plans;

(vii) To recommend measures for effective institutional linkages between education on the one hand and rural development, environment, health, industry and other developmental sectors on the other;

(viii) To explore the possibilities of introducing meaningfully long distance learning techniques particularly the utilisation of modern communication technology;

(ix) To assess ways and means of augmenting financial
      resources for educational developmental including
      extended local community participation in
      financing educational developmental programmes;

 (x) To formulate proposals for the Seventh Five Year
      Plan (1985-90) in the light of the above
      perspective indicating priorities, policies and
      financial costs.

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ANNEXURE - II

Composition and Meetings of the Drafting Committee.

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Composition

1. Prof. R.C. Das
   Principal
   CET
   NCERT

2. Dr. R.P. Singhal
   Consultant
   NIEPA

3. Prof. M.M. Chaudhri
   Head
   Deptt. of Teaching Aids
   NCERT

4. Mrs. Renuka Mehra
   Under Secretary
   Ministry of Education & Culture ...... Convenor

   The Committee met on January 3, 12 and 17, 1984.

LIST OF PARTICIPANTS

The Working Group met on 5.12.83, 28.12.83 and 30.1.84.

The persons who attended these meetings were as follows :-

1. Prof. Rais Ahmed
   Vice-Chairman
   UGC, Bahadur Shah Zafar Marg
   New Delhi   ... Chairman

2. Prof. Yashpal
   Chief Consultant
   Planning Commission
   Yojana Bhavan, New Delhi

3. Prof. M. R. Bhide
   Coordinator
   School of Multi Disciplinary Studies
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   Education Division
   Planning Commission
   Yojna Bhavan, New Delhi.

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11. Dr. P. C. Joshi
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    Institute of Economic Growth
    University Enclave
    Delhi - 7.

12. Prof. S.R. Joshi
    Software Systems Group
    Space Applications Centre
    Ahmedabad - 380053.

13. Prof. Anwar Jamal Kidwai
    Ex-Vice-Chancellor
    Jamia Millia Islamia
    New Delhi

14. Smt. Vijay Mulay
    Principal Investigator
    Research Project on
    Correspondence Education
    B-42, Friends Colony West
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    Shastri Bhavan, New Delhi.

16. Dr. K.B. Pavate
    Scientist-in-Charge
    Delhi CEERI Extension Centre
    CSIR Complex NPL Campus
    Hill Side Road,
    New Delhi.

17. Prof. T. Subba Rao
    Principal
    TTTI, Madras.

18. Shri S.C. Sahai
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19. Dr. (Miss) M.S. Shah
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20. Shri Shailendra Shankar
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    Mandi House, New Delhi.

21. Shri H.R. Sharma,
    Director
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    Green Park Extension
    New Delhi

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23. Shri R.S. Trehan
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24. Shri K.G. Virmani
    Senior Fellow
    NIEPA
    New Delhi

25. Mrs. Renuka Mehra
    Under Secretary
    Ministry of Education & Culture
    New Delhi.   .... Convenor

Financial Outlays for the Seventh Plan (Rs. in Lakhs)

		1985-86	1986-87	1987-88	1988-89	1989-90	Total
Table-I	Low Cost Teaching Aids						
(a)	Training (1,50,000 x 31)	46.50	46.50	46.50	46.50	46.50	232.50
(b)	Grants for Production of material (50,000 x 31)	15.50	15.50	15.50	15.50	15.50	77.50
(c)	Printed matter for Block level (50,000 x 31)	15.50	15.50	15.50	15.50	15.50	77.50
	Sub-Total :	77.50	77.50	77.50	77.50	77.50	387.50

N.B.- Cost in Rupees x Number of Units.

		1985-86	1986-87	1987-88	1988-89	1989-90	Total
Table-II	**Graphic & Reprographic Aids**						
(a)	Reprographic material (2,00,000 x 25)	50.00	—	—	—	—	50.00
(b)	Staff (2,00,000 x 31)	62.00	62.00	62.00	62.00	62.00	310.00
(c)	Training (1,00,000 x 31)	31.00	—	—	—	—	31.00
(d)	Production, duplication and distribution of material (25,000 copies of 25 charts/pictures per state per year @ Rs.5 per copy)	968.75	968.75	968.75	968.75	968.75	4843.75
	Sub-Total :	1111.75	1030.75	1030.75	1030.75	1030.75	5234.75

(X11)

Table III	Radio Production	1985-86	1986-87	1987-88	1988-89	1989-90	Total
(a)	Equipment (20,00,000 x 20)	300.00	100.00	-	-	-	400.00
(b)	Building (20,00,000 x 20)	300.00	100.00	-	-	-	400.00
(c)	Staff (5,00,000 per State)	75.00 (15 States)	100.00 (20 States)	155.00 (31States)	155.00	155.00	640.00
(d)	Training (6,00,000 per State)	66.00 (11 States)	60.00 (10 States)	60.00 (10 States)	-	-	186.00
(e)	Production Costs (1,00,000 per State)	15.00	20.00	31.00	31.00	31.00	128.00
(f)	Radio Sets (250 per set - total sets 6,00,000)	125.00	250.00	375.00	375.00	375.00	1500.00
(g)	Battery (40% schools) (100 per year for 2,40,000 sets)	20.00	60.00	120.00	180.00	240.00	620.00
(h)	Maintenance (20 per set for 6,00,000 sets)	10.00	30.00	60.00	90.00	120.00	310.00
	Sub Total :	911.00	720.00	801.00	831.00	921.00	4184.00

Table IV Television Production	1985-86	1986-87	1987-88	1988-89	1989-90	Total
(i) On Going Schemes						
(a) CIET Building	82.00	82.00	–	–	–	164.00
– Equipment	100.00	100.00	–	–	–	200.00
– Staff & Production	15.00	15.00	15.00	15.00	15.00	75.00
(b) SIETs (six)						
– Building	200.00	–	–	–	–	200.00
– Equipment	300.00	200.00	–	–	–	500.00
– Staff & Production	65.00	65.00	65.00	65.00	65.00	325.00
(c) University Centres(Six)	65.00	65.00	65.00	65.00	65.00	325.00
(ii) New Schemes						
(a) Equipment for SIETs (200,00,000 x 8)	160.00	720.00	720.00	–	–	1600.00
(b) Building for SIETs (40,00,000 x 8)	32.00	144.00	144.00	–	–	320.00
(c) Staff & Training (9,00,000 x 8)	2.00	72.00	72.00	72.00	72.00	290.00
(d) Production costs (2,00,000 x 8)	–	8.00	16.00	16.00	16.00	56.00
(e) TV sets (2,000 x 2,00,000 sets)	1000.00	1500.00	1500.00	–	–	4000.00

	1985-86	1986-87	1987-88	1988-89	1989-90	Total
(f) Maintenance & Licence (300 x 2,00,000 sets)	150.00	375.00	600.00	600.00	600.00	2325.00
(g) Local Production in Universities & Colleges						
(i) Equipment (5,00,000 x 25)	125.00	-	-	-	-	125.00
(ii) Production Costs (50,000 x 25)	12.50	12.50	12.50	12.50	12.50	62.50
(h) Software & VCRs to University Libraries						
(i) VCR (50,000 x 50)	25.00	-	-	-	-	25.00
(ii) Software (20,000 x 50)	10.00	10.00	10.00	10.00	10.00	50.00
Sub Total :	2343.50	6968.50	3219.50	855.50	855.50	10642.50

		1985-86	1986-87	1987-88	1988-89	1989-90	Total
Table V	Open School						
	(a) CBSE Open School	20.00	20.00	20.00	20.00	20.00	100.00
	(b) Open Schools in the States (20,00,000 x 4)	80.00	80.00	80.00	80.00	80.00	400.00
		100.00	100.00	100.00	100.00	100.00	500.00
Table VI	Open University	500.00	500.00	500.00	500.00	500.00	2500.00

Table VII. Computer Education (10,000 Schools)	1985-86	1986-87	1987-88	1988-89	1989-90	Total
(a) Computer System (10,000 x 20,000)	-	2000.00	-	-	-	2000.00
(b) VCP (5,000 x 10,000)	-	500.00	-	-	-	500.00
(c) Teacher Training Programme	50.00	50.00	50.00	50.00	50.00	250.00
(d) Course material for students	100.00	100.00	100.00	100.00	100.00	500.00
(e) Teachers' Guides & support material	30.00	30.00	30.00	30.00	30.00	150.00
(f) Resource Personnel	150.00	150.00	150.00	150.00	150.00	750.00
(g) Administrative and misc. costs	20.00	20.00	20.00	20.00	20.00	100.00
Sub Total :	350.00	2850.00	350.00	350.00	350.00	4250.00
Table VIII. Training of Educational Planners & Administrators	10.00	10.00	10.00	10.00	10.00	50.00
GRAND TOTAL of Table : I to VIII.	5403.75	12256.75	6088.75	3754.75	3844.75	31348.75