CHAPTER - VI

TECHNICAL CONDITIONS
(EQUIPMENT OF SCHOOLS WITH RECEIVING SETS)

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TECHNICAL CONDITIONS

Radio lessons will have their real significance and utility only when the schools are provided with good receiving sets and most favourable listening conditions. The reception of the educational programmes in the schools, poses many problems, such as provision of radio set, common hall, a trained teachers and ideal listening condition.

In such countries like U.K., U.S.A., Canada, France, West Germany and Australia almost all types of receiving sets are used in schools. There are battery and mains sets. There are also AC and DC straight and superhetodyne sets. They are purchased by schools as well as voluntary organisations. For instance in Canada listening of school broadcasts is not compulsory in schools. It depends on the discretion of class teachers and principals. Local school Board meets the cost of receiving sets if the school authorities wish to have them. But in Australia the case is different. In large schools there is usually a central receiver and loudspeakers with
separate volume control in each room. Broadcasts can be switched at the centre to any room or rooms or made available to all of them and taken by those who desire to do so. In smaller schools a console or mantel set equipped with one or more speakers is normally used. The schools with the aid of Parent's clubs pay for these installations. In different ways the Education Departments subsidise the purchase or pay both installing or maintenance costs.

The Federal Government remits wireless Licence fee for schools with fewer than 50 children and some State Education Departments pay the licence fee for their schools. The Post Master General's Department which handles the technical services of the ABC helps the schools with technical advice off and on.

In USA reception conditions are very satisfactory schools within the service area of FM static free and of high fidelity. Educators agree that frequency modulation should be recommended for group listening.
In Belgium and Brazil most of the schools do not have technical equipments due to lack of funds. Interested teachers take their own radio sets into the class rooms.

In our own country very few schools have receiving sets. Fewer still have a common hall where the set can be installed for listening by more than one class at a time. In microscopic few schools there are loudspeakers to carry the programmes to individual class rooms. The National Institute of Audio Visual Education should come forward and accord all possible financial assistance to schools in this matter.
PROBLEMS CONNECTED WITH FAVOURABLE RECEPTION

The most pressing problems to be faced in this connection is that the receiving sets must have clear natural and undisturbed reception. Hence very sensitive and standard type of radio sets should be approved by the Department of Education. For small single class room school an ordinary radio set will serve the purpose. Upto four class rooms additional loud-speakers may be used. For big type schools, powerful amplifiers and additional speakers have to be installed for maximum benefit.

In Australia reception is generally very satisfactory but in pockets among high mountains. Radio Inspectors of the P.M. General’s Department help a lot in advising schools how to surmount the difficulties due to high tension wires. Apart from this the use of special room mini mixes the difficulty. ABC issues a technical hand book giving advice on the installation of equipment for schools broadcasts reception.
In Canada as a rule schools receive radio lessons in individual class rooms.

In India commercial type receiving sets are used. Schools pay for their supply, installation and maintenance. Condition of reception is far from satisfactory. Schools in big towns suffer from electrical interference. Motor traffic and noises from the streets as well as playgrounds are other sources of disturbance. It is true that AIR staff often visits the schools and gives valuable suggestions for the improvement of reception condition. But this facility is not available in schools situated far away from radio stations.

Usually the receiver is installed in school hall or large chamber and classes assemble there. Students sit in the same way as they sit in their classes. General instructions regarding tuning volume control, reducing electrical and other interference are issued by AIR from time to time.
UNESCO Report on Broadcasting to schools 1949 has given valuable guidelines concerning the maintenance of receiving sets and creation of ideal listening conditions:

(8) "The radio set should be rigidly constructed and not easily damaged. It should be easy to operate, e.g., having preset tuning. The various parts of the equipment needed for a large school might usefully be housed in a central control room and consist of a number of separate units grouped together or, for example, a rack."

"The loudspeakers should be at least 10 inches in diameter and capable of reproducing the transmitted sound without distortion. The class room loudspeaker should be such that the required volume can be obtained regardless of the number of loudspeakers in use simultaneously. A well balanced sound diffusion throughout the entire class room should be secured."
"Class room acoustics sometimes cause bad listening conditions to such an extent that children find it impossible to listen with pleasure. In such circumstances steps should be taken to improve the acoustics of some or all of the class rooms."

Besides this a good antenna is very necessary for proper listening. There are various kinds of such equipments available to schools. First is the disc recorder. It should be of good quality. Tape recorder or the magnetophone and wire recorder are also useful equipments. They should be simple in operation, portable adaptable and as much fool proof as possible.

The problem of proper maintenance is not less important. Local radio dealers should visit schools at least once in a week and see if it is working properly. Besides this broadcasting organization if possible should send its own technical officers to schools from time to time.

Special requirements of the school broadcast receivers are:

1(a) An all wave receiver for operation from AC/DC mains with an output of 1 or 1.5 watts.

(b) An all wave receiver of the battery operated type with an output of 600 to 900 mw.

2(a) A single band medium wave receiver for operation from AC/DC mains with an output of 1 to 1.5 watts.

(b) A single band medium wave receiver for operation from batteries with an output of 600 to 900 mw.

Receivers which are used in areas far away from the transmitter must have a sensitivity at least of 100 microvolts and those which are used with in the range of the medium wave transmitters of 500 microvolts. Superheterodyne receivers are always preferred because better selectivity is obtained from them.

Really speaking the problem of school broadcasting in India and other developing countries is mainly a problem of cost and maintenance.
(9) "The successful operation of the scheme depends on the servicing facilities available within easy reach of the schools. For this purpose servicing stations need to be set up at convenient localities so that the receivers should be serviced quickly and batteries could be replaced or charged periodically."

We all now that receivers which are operated from dry battery are more economical to maintain than those which are operated from accumulator batteries. Thus it may be said that natural and undisturbed reception is a basic necessity in school broadcasts.

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(9) Ibid. Page 22.
Frequency Modulation is a boon for education. It is a method of transmitting radio waves. It has many advantages over A M (Amplitude Modulation wave).

(a) It is less subject to static and interference.

(b) F M can supply high fidelity programmes. Its reception quality is perfect.

(c) F M radio transmitters are comparatively cheap to commission and to maintain.

(d) At present many new radio receiving sets are built to receive both A M and F M programmes.

(e) In USA and Canada certain F M radio channels have been reserved exclusively for the use of educational broadcasts. There is no such channels in the A M band.

(f) Generally F M band is not overcrowded. Its cost is also not much. Only a big studio is required. These days F M receiving sets are not many but by and by F M audience will increase.
In our country FM is not yet used. AIR central and State education Departments should pool their resources to set up FM channels and popularise FM receiving sets in view of giving an impetus to educational broadcasts for schools.

USE OF T.V. IN SCHOOL BROADCASTINGS

Television is no doubt the most effective medium for education. It is one of the easiest methods of unravelling the complicated, quantitative, academic and administrative problems that face the world. Mr. George N. Gordon defines the TV in the following words. :-

(10) "------ the term educational television is to cover almost any sort of educational video programme presented for any serious purpose or in any attempt to teach something to someone."

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(10) Educational Television By George N. Gordon, published 1965 in New Yor, Chapter 1 Page 2 & Para 3.
This term generally refers to electric transmissions whose function is to teach a specific body of subject matter to students at home or in school when the subject matter is part of a formal course of study. TV is really capable of making a vital contribution to the solution of numerous problems of both teaching and learning. It has little to do with our concepts and values of education. But it can definitely play a very formative role in the institutions of learning. There are two types of TV broadcasts, closed circuit and open circuit.

1. Broadcasts transmitted to a definitely prescribed area in such a manner that conventional receiving sets can not pick them up are called closed circuit broadcasts.

2. Conventional broadcasts transmitted over one or more of the frequencies assigned to a given area, are called open circuit broadcasts. The range of open circuit transmission covers a radius of about fifty miles or a bit more.
There are two main bands, VHF and UHF. These days most open circuit broadcasting is transmitted on VHF (Very High Frequency) bands. With the passage of time another set of seventy UHF (Ultra High Frequency) channels were discovered and brought into use. This is very advantageous.

Almost in every developed or developing country TV is used for educational purposes. It is specially a boon for those countries where it is difficult to spread knowledge by conventional devices such as building schools training teachers, providing teaching tools text books and other materials. In Italy TV has proved to be very valuable for adult education. Story telling hours, puppet shows and many other literary and cultural programmes are very much liked and appreciated in Soviet Union. In England and France Tellecasts are designed to enrich the present curriculum offerings. But there is one flagrant risk involved in TV system. It can be used at any time as a device for indoctrination or an instrument of revolution or counter revolution by political masters of any country.
Mr. Charles Scepmann emphasising the utility of Television wrote in 1964.

(11) "Television is distinctive in its universal reach. No other medium can transport us simultaneously to the scene of action anywhere on earth. Television is distinctive also as a new language, a new art in the making with extraordinary power to evoke on the senses and focus the mind on reality."

In other words TV can educate every one of us to an understanding of the insistent present.

There are many uses of instructional TV. It may be very well utilized for enrichment purposes that is an added resource. It may be safely used for cooperative or team teaching in which televised instructions assume part of the teaching burden.

It may also be used for total teaching in which no skilled teacher except one appearing on the TV screen is involved with the pupil taking a particular course, fit for secondary school.

Page 3 Para 2 (Chapter III) Educational TV
George N. Gordon.
George N. Gordon sums up as under:

(12) "To coordinate televised instruction with current school or university program, it is absolutely necessary that all personnel administrators, teachers or monitors be apprised of the nature of the telecasts and their content in advance."

Mr. White head pointing out to the teacher's role before TV says:

(13) "The teacher has a double function. It is for him to elicit the enthusiasm by resonance from his own personality and to provide the environment of a larger knowledge and a firmer purpose. He is there to avoid the waste which in the lower stages of existence is nature's way of evolution."

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(12) Educational TV, Chapter VI, Page 67 & Para 2.
As far as TV in classroom is concerned, the best serviceable and economical receivers should have a twenty-one to twenty-four inch viewing surface which is satisfactory for the average classroom. Master antenna system leading to every classroom should be set up. In instructional TV the lecture demonstration is the most popular method on all levels of education. Interviews, panel discussions and dramatizations are also used.

There are some apparent shortcomings in teaching through TV. They are as follows:

1. Instructions at TV generally follow the classroom procedure.

2. Instructional broadcasters often copy the techniques of commercial TV producers.

3. TV medium has a passive nature.

4. There is lack of interaction among TV teachers, class teachers and students.

5. It may decrease the amount of autonomy of local authorities.
But in spite of the above mentioned drawbacks the immense utility of TV in educational field can not be questioned.

In USA TV rose during the late 1940's and became popular by 1948. At present most part of school as well as outside school education is imparted through TV. Other countries of the World are leading fast towards the use of TV for educational purposes. UNESCO world communications New York, UNESCO 1964 page 34 says:

" --- The world total of receiving sets in use today hovers around 130 million mar & and 2230 transmitters are beaming programs on every continent. In Europe alone there are 1160 transmitting stations and live broadcasts from Moscow to London and vice versa are not uncommon."

Developing countries like Brazil Mexico Guatemala, Ivory coast and Kenya are using TV for eradicating illiteracy. TV is also used for imparting formal education in many countries.
Those that do not possess trained teachers and school buildings in sufficient numbers and lack other teaching instrument have resorted to TV to compensate the deficiency. Advanced countries like U.S. and Japan continue to use TV for supplementing and enriching the class lessons. TV has also been used for imparting vocational and technical training to students and adults alike.

In India the use of TV for educational purposes is almost in its initial stages. It is only in Delhi and Bombay this medium is being used for school broadcasts. Approximately 500 schools in Delhi and about 500 in Bombay and Poona have TV sets. Broadcasts designed for middle and high school students are mostly in the regional languages. A few English broadcasts are also sometimes included. They did not follow the enrichment policy but were based mainly on the courses prescribed in the curriculum. In the beginning Delhi schools were not fully equipped -
for science teaching so the demonstrations on
TV with better equipments are watched by the students
with loving interest. But today the TV lessons
are not so popular only because the class room
technique is still used.

There are 450 million people living in
our villages. Most of them are poor and illiterate.
So villages without schools can be served by TV
sets with teaching assistant so that elementary
education can be given to children even before
schools can be built in their villages. The same
TV sets could very well be used to help adults to
become men of letters. It is also said that only
half the primary school teachers in India possess
a high school diploma. The village TV set could
be used to improve the class room teaching. It is
true that TV is a very expensive medium of teaching
but its utility is beyond measure. Therefore our
Government, be it in phase, must try its best to
expand TV net work through out the length and
breadth of the country so that illiteracy may be -
rooted out and students be fully benefited 's

their pursuit of 'knowledge. Door Darshan is no
doubt performing its duties and responsibilities
in the domain of education sincerely.

**INTERNATIONAL EXCHANGE**

It means that the recorded educational
programmes should be exchanged among friendly
countries with a view to develop understanding
and share's each others experiences. Australia
exchanges its programmes with voice of America,
BBC and CBC freely. Apart from this exchange of
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book-lets and pamphlets are also made from time
to time CBC exchanges its programmes with American
Schools of the Air, BBC, Australia and UNO. India
also exchanges its programmes with ABC, BBC and
USA but they are rare. This is a very healthy
practice and it must receive the immediate attention
of AIR authorities.
FUTURE PLANS

Progress in any field can never reach the optimum point because it is an ideal and unachievable. Hence there is always room for improvement. Even advanced countries like USA, Canada, West Germany, France, Australia, Japan & U.K. are constantly engaged in making improvement in their school broadcasts both in their content and form.

In Australia attempts are still in progress to better the scripts, editing and production. Besides this, authorities are deeply concerned with improving the National relay at a high level of material and presentation.

In Canada, inspite of several difficulties the CBC has made it a point to improve the standard of production of school broadcasts and at the same time it wants to launch many long term planning of future programmes. The education authorities want to make the radio lessons more curriculum oriented.
They also want to enrich visual aids and extend international exchanges as much as possible.

**BBC with the help of audience research**

is constantly making strides towards improvement in the field of school broadcasts. Its object is to bring about a perfect and profitable coordination between school broadcasts and classroom teaching.

India is a developing country, but its ambitions are very high. It has set before itself the object of making school broadcasts universal and meaningful. The main role of broadcasting in this country is primarily to break through the barrier of apathy and create enthusiasm for school broadcasting to reach the small village schools whose students are generally deprived of well equipped laboratories, libraries, films and other means of mass education. AIR with all its limitations and difficulties is leaving no stone unturned in making school broadcasts a success.
Delhi, Bombay, Madras and Calcutta are living examples. The National council for school broadcasts with representatives of AIR and of the Ministry of Education, the National council for Educational Research and Training and of associations of teachers is actively busy in laying down the policy and plans for school broadcasts for the country as a whole.

**SCHOOL BROADCASTING IN PROFESSIONAL TRAINING**

It is very lamentable that school broadcasting organization has paid little or practically no attention towards the vocational or professional training of the students not only in India but also in many of the lands lying beyond the shores of this sub-continent.

United States of America is perhaps the only country where local radio stations put out lectures, talks and interviews on the courses of professional studies in a regular and systematic manner. U.K., West Germany, Canada and Japan are -
following suit. In our own country it has not yet practically set a foot. Therefore it is the duty of AIR to prepare and put out radio lessons for students of Indian Technical Institutes, Polytechnics, Medical Colleges, Engineering Colleges, Educational Training Colleges and Indian Institutes of Technologies over and above. These school broadcasts will not only help them in improving their professional efficiency but also create in them a zest for life. For students of secondary schools too school broadcasts dealing with the importance and utility of professional courses of study will prove to be of immense benefit. Therefore, let us hope that the authorities of AIR and technical education will pay full attention towards the preparation and execution of school broadcasts for professional training.