COMPparative analysis and Conclusions

Given the conditions of the use of television and telecommunications for higher education in Canada and India as described above, and basing the comparative analysis on the objectives of the study, the situations in the two regions are comparatively discussed.

I. Circumstances that Lead a Country to Use Technology for Education

The decision to utilise technology to further national goals for development and education is usually based on a combination of practical and ideal conditions. Based on the given environment and available infrastructure, a government lays down policy objectives and goals. Hence, a discussion on the circumstances that lead a country, specifically, Canada and India, to use technology for education, needs to consider the stated policy goals for education and communication, and the available infrastructure of education and telecommunications technology.


Governments all over the world profess to work for the betterment of their peoples. One of the main needs in any country is the education of its citizens. Governments therefore take up the responsibility of education as one of their main tasks in the administration of their respective countries.

The availability of communication technology has usually aroused the interest of educators, who look upon it as a means of extending the reach of education. In some countries, especially in the developed world, communications technology, especially radio and television, have been in place for a number of years before educators decided to utilise them for their own purposes. Such was the case in Canada, where it was individual institutions and universities who initiated the use of available radio and television channels to make degree and diploma courses available to media audiences. In other countries, particularly in the third world, communication technology has sometimes been put in place specifically for educational purposes. This was the stated policy goal for the promulgation of television in India. The utilisation of television for higher education, however, has been, both in Canada and India, largely because of the availability of spare capacity on their respective satellites.
In Canada, the government's realisation and acknowledgement of the importance of using telecommunications for higher education came only in the late '60s and early '70s. The White Paper on Broadcasting of 1966 and the Sixth Report of the Task Force on Broadcasting Policy in 1969 addressed the question of education broadcasting. The CRTC began to grant licences to educational broadcasting services of provincial governments. The CRTC has also now made it mandatory that cable companies provide an essential channel to educational broadcasting in their respective regions.

The 1988 report of the Standing Committee on Communication and Culture recognised the function performed by provincial educational programming in meeting provincial needs. It recommended that the broadcasting authorities of the provincial governments should be operated as autonomous entities, like the CBC. However, provincial broadcasters would necessarily have to work closely with provincial departments of education but they should be free of direct political interference and control.

The Committee has also supported the 1985 decision to allow educational producers access to the federal Broadcast Fund.

At the provincial level, especially in British Columbia, the Ministry of Education decided to take up the federal offer of satellite capacity for educational broadcasts in 1978, and began telecasting programmes for distance education students. In 1980, the Knowledge Network was created to shoulder the responsibility of educational telecommunications in the province. The mandate of the Network, under the broad umbrella of the Open Learning Agency, is to provide general educational programming to the general audience as well as telecast specific course-related programming provided for by the various universities and institutions for their distance education courses.

In India, the stated policy goal of television has always been education. The first telecasts in 1959 began with educational programmes for Delhi schools and communities. The first major experiment in satellite broadcasting, SITE, during 1975-76, had as its stated goal, education and development.

When general programming commenced on Indian television, it occupied only the evening hours. Thus there was spare capacity available on Doordarshan. Meanwhile, the Task Force on the Use of Mass Communication and Educational Technology was constituted by the UGC. This was in recognition of the need to utilise communication technology, especially television, for educational purposes. The report of this Task Force (1983) saw communication technology playing a leading role in improving standards of higher education.
and reducing disparities between different regions and people. The New Education Policy (1986) redefined the role of education as a vehicle of human resource development. It has given significant importance to distance education and the use of modern communication technologies in achieving universal education.

"..., Modern communication technologies have the potential to bypass several stages and sequences in the process of development encountered in earlier decades. Both the constraints of time and distance at once become manageable. In order to avoid structural dualism, modern educational technology must reach out to the most distant areas and the most deprived sections of beneficiaries simultaneously with the areas of comparative affluence and ready availability." (National Policy on Education - 1986, Ministry of Human Resource Development, May 1986, pp. 15 - 16).

The goal of the Countrywide Classroom programmes as the project came to be known is basically to provide 'enrichment' and supplement the core curriculum of college courses. The programmes are intended to broaden the horizon of college students and add to their existing knowledge base. The production and acquisition of programmes has been based on subject availability and is not related to any specific courses yet. Doordarshan agreed to provide air time for these programmes during each weekday.

The stated policy goals of the two countries are ostensibly similar, i.e., the use of communication technology in order to bring education to larger sections of their peoples. The reports and committees have laid down the broad objectives and have thus acknowledge the need to utilise television for education. It is in the goals for actual execution of the ETV projects that the two countries differ.

While the general programming on Canada's educational television networks is provided for the general viewing public, in India the Countrywide Classroom is targetted specifically to college students. In Canada, programming targetted to college-level students is course-specific. Though India's Countrywide Classroom is targetted to college students, to date it is not linked to specific courses or syllabi. However, it is at present aimed at regular college students; educational programmes in Canada aimed at college-level students are aimed at students enrolled in distance education courses.

B. Infrastructure of Telecommunications Technology.

Ever since the invention of telecommunications revolutionised communications infrastructures, every country that could half afford it has opted to invest in such
technology. Since telecommunications technology is both capital-intensive and vital for communications, nations have by and large opted to centralise government policymaking. Telecommunications policy has been influenced by the geographical size of countries, the political climate, population concentrations, and perceived national goals.

In Canada, the CRTC, which lays down the rules and regulations for the functioning of communication technology, is one of the nine agencies under the federal Department of Communications. The CRTC is a regulatory body and does not actually produce or broadcast programmes. The CBC holds the mandate for the production and broadcast of television programmes. Education has been broadly mentioned in the CBC's programme mandate as an aspect of culture, there is no specific provision for the broadcast of educational programmes targeted specifically to students. Since education is under the jurisdiction of the provinces, the initiative to use telecommunications for education has been taken from time to time by the various provincial governments. The CBC has offered programme time and production assistance to educational programmes initiated by individual institutions. In the late '60s, the French language network of the CBC aided the Francophone universities offer of television courses towards a degree.

It was in the late '60s and early '70s that the Canadian federal government began to acknowledge the need to use television for education. Licenses were granted to a few organisations working in collaboration with universities, like, TVOntario, Access Network, Radio Quebec, and the Atlantic Satellite Network. With the launch of the Hermes satellite, the federal government offered satellite time to organisations interested in television telecasts. At this juncture, a few educational institutions, including those already in place like TVOntario, came up with feasible proposals. The Knowledge Network of British Columbia was set up at this time.

A variety of technologies is available for communications in Canada. The majority of programming is carried through the cable networks. Canada is said to be the most heavily cabled system in the world. A CRTC ruling that cable companies allot an essential channel to the local educational station has made it possible for ETV to be available wherever cable is available.

CCTV systems established on university campuses have also been termed as educational television. Universities like McGill and McMaster have offered TV lectures to students in classrooms, through CCTV links.

The availability of telecast capacity via the various satellites launched by the federal government has considerably aided educational television. Beginning with the
Hermes, all the Canadian satellites - Anik B, Anik C1 and Anik C3 - have carried ETV broadcasts.

Canadian educators have used a variety of other telecommunications technology as well. The telephone links of audio teleconferencing through multi-point bridges is used fairly extensively by distance education house. At present, the facility of taping television programmes on video is being used by many students, universities are also providing video cassettes for some courses.

In India, television was introduced as an educational rather than a commercial or entertainment-oriented device. As compared to Canada, India has scarce resources available for the development of telecommunications and television. Hence, the establishment of the infrastructure proceeded cautiously. Delhi had a few school and general programmes for some years before other metro cities began television telecasts. The rest of the country had to wait till 1983 and the successful launch of the Indian satellite to be able to receive television programmes.

The types of television technology available in India have been terrestrial (through microwave links) and satellite. Both these technologies necessitate a centrally-controlled infrastructure responsible for setting up the hardware facilities and software production. Besides, because of the large investment involved, television in India has to be administered by the central government. Thus, the national programmes are produced and transmitted via satellite from Delhi, while the regional programmes are produced and transmitted from the various regional Doordarshan Kendras which function as branches of the central office of Doordarshan at Delhi.

Educational broadcasting in India is therefore controlled by the central government. Though the schools broadcasts are generated out of the regional centres with the collaboration of the SCERTs, it is basically under Doordarshan; moreover, the SCERTs are branched of the NCERT.

Television programmes for higher education are produced under the auspices of the UGC through its various media centres, and are transmitted from Delhi Doordarshan through the national network via satellite.

Thus, in Canada and India, the availability of television technology differs. Canada has a range of technology available to its citizens, some of which can be used for a centrally-controlled network, while others offer the possibility of institution-specific network through CCTV. In Canada, the cable system provides for a variety
of channels, each run by different television stations and/or cable companies. Moreover, since education is a provincial subject, various educational institutions are their own production facilities and/or collaborate with educational television organisations for this purpose. This enables independent programming for the various provinces, enabling educational institutions to structure television programmes according to their course syllabi. In India, the available technological infrastructure necessitates central control of programming. Since only one channel exists, one which two hours per day have been allotted to ETV, the UGC produces and administers the telecast of ETV for all of India's college students.

C. Infrastructure of Education.

In federably constituted nations like Canada and India, where the country has been formed as a result of previously independent States coming together as a nation, there has been a mutually agreed division of powers between the central/federal government and the state/provincial governments. This has often been based on the local (i.e., statewise or provincially) needs of the people.

In Canada, given the variety of cultural backgrounds of its citizens across the various provinces, and their desire to maintain their cultural identity, the responsibility for education has been vested in the provinces. Each province has its own ministry for education and higher education, which decide the policy for the education infrastructure of that province.

In British Columbia, Canada, the Ministry of Advanced Education & Job Training is responsible for the administration of the universities in the province as well as the Open Learning Agency and the Knowledge Network. While each of these bodies are autonomous, they are ultimately responsible to the Ministry since it is the principal source of funding.

In Canada as a whole, the demand for higher education has increased by 129% during 1965 to 1985, while the demand for elementary and secondary education has decreased by 300%, during the same period. Moreover, the demand for part time study has increased by 7% compared to a 1% decline in fulltime enrolments during 1980-86. Thus, the utilisation of telecommunications to provide avenues for part time study has been seen as a partial answer to the educational situation.

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In India, the subject of education is vested in the Concurrent List, i.e., the responsibility lies both the Centre and the States. The Central government and the State governments are equal partners in framing educational policies and their implementation. However, the Central government is supreme over the states in enacting educational laws. The Central Government can implement directly any policy through a network of organisations including the UGC. Each Indian state has a Ministry for Education, under whom function the boards of primary, secondary intermediate, and higher education. Schools and junior colleges are administered under the first three types of boards Degree colleges and post-graduate institutions function under affiliation to one of the universities in the State, whose vice-chancellors are responsible to the State government. Central government authority is represented by the office of the Chancellor, which is usually held by the Governor of the concerned State.

The UGC is the central body that has been given the responsibility for the central administration of higher education. It provides guidance and assistance to the individual universities. Central or nationwide plans for higher education are usually proposed and administered by the UGC.

However, this infrastructure in India remains inadequate. At the tertiary level of education in India, less than 0.01% of the Indian population is receiving education in college or university at a time when two thirds of the population is under the age of 30. Except in the urban centre students have little or no access to educational facilities such as laboratories or audio visual aids. However, the given student community is fairly homogeneous in terms of educational level. There is a common core curriculum and a measure of understanding of the English language.

While the needs of student populations are widely similar in Canada and India, the educational infrastructure available in the two countries in terms of providing for such needs is dissimilar. The demand for higher education is steadily growing in both countries. In terms of availability disparities exist in both Canada and India in terms of the urban versus the rural educational facilities. Both countries have attempted to achieve some kind of uniformity for the whole nation while allowing individual provincial units to plan and administer regional education. Given the larger population of India, however, the machinery put into place has not been able to reach the majority of the eligible student population. In Canada, the educational needs of students are changing, with more persons opting for part-time study and looking for employment-oriented courses. The search for an efficient channel of providing education is essential for both Canada and India; and both have established educational television facilities for this purpose.
II. THE UTILISATION OF TECHNOLOGY FOR EDUCATION.

Given the respective stated goals for the utilisation of telecommunications technology for education, how have the two countries administered such utilisation?

For the administration of educational technology, two spheres of activity have to be brought together - education, and communication technology. Both these areas traditionally function separately. Hence, the two ministries set up means of collaboration for the purpose, designating relevant bodies with the responsibility of production and dissemination.

A. The Educational Institutions Responsible for such Use.

In both Canada and India, the government machinery for education is the body that has taken the initiative for and proposed the utilisation of telecommunications technology for educational purposes.

In Canada, responsibility for education is vested in the provincial governments. Hence, taking the case of the province of British Columbia, currently it is the Ministry of Advanced Education & Job Training that looks after the educational use of telecommunications. The Open Learning Agency was constituted in 1988 to administer distance education in the province, and the Knowledge Network, the educational telecommunications network of the province since 1980, was brought under the broad umbrella of the OLA, while retaining most of its autonomy.

The utilisation of telecommunications for education in B.C. has had a chequered history. Moreover, the office of the ministry of higher education in the province has undergone various changes along with changes in political power. Post-secondary (or, higher) education has been aligned and realigned with various other areas. It was during the period that higher education ('Universities') was clubbed with science and communications that the ministry opted to experiment with and subsequently regularise the use of telecommunications - principally in the form of television - for educational courses. Presently, post-secondary education has been clubbed with employment-oriented training.

In Canada, educational telecommunications has been used to support distance education. The concept of 'open learning' has been applied to distance education, and television programmes used to support specific courses offered by the various universities and colleges. The Open Learning Institute (OLI) was established to assume provincial
responsibility for distance education. Individual universities and colleges also have their own distance education programmes. (The University of British Columbia, Simon Fraser University, The University of Victoria, The B.C. Institute of Technology, North Island College, and the Emily Carr College of Art & Design). All these institutions have incorporated television programmes at various times for various courses. Television courses are seen as one part of the total input for distance education. As such, funding for TV courses is allocated out of the overall budget for distance education.

To co-ordinate distance education activities in the province, the B.C. Open University Planning Council was created. This consists of representatives of the various educational institutions as well as representatives of the Ministry of Advanced Education & Job Training. Funds are allocated to the educational institutions through this Council. With the promulgation of the Open Learning Agency Act in 1988, the OLA is now the overall body through which this Council operates.

Television courses are thus funded by the provincial government through a co-operative allocation. The role of the OLA and the Open University Planning Council does not go beyond the decision-making for funding. That is the actual planning and production of courses is proposed and undertaken by the individual educational institutions.

In India, the initiative to utilise television for higher education was taken by the UGC. The UGC commissioned the Task Force on Mass Communication & Educational Technology and, based on its report submitted in 1983, set up the UGC-INSAT TV Project. The central office of the project has been located at Jamia Millia Islamia in Delhi.

It was possible for the federal Department of Education Under the Ministry for Human Resource Development and acting through the UGC to plan a nationwide utilisation of communication technology for higher education. (Since it could act on the prerogative given to it when Education was included in the Concurrent List).

Since the programmes are targetted at college students, and since the UGC administers the project, the institutions involved in production are the various universities and institutes of higher learning in the country. The media centres that have been set up under the UGC INSAT TV Project are located at selected universities. The Directors/Co-ordinators of these Centres are responsible both for to their respective vice-chancellor (since the funds are channelled through the universities) and to the central committee of the Project. The Chairman of the Committee is appointed by the UGC. Besides the Chairman, the UGC Secretary of the Project and all directors/co-ordinators of the media centres are members of the committee.
While the central committee lays down the broad guidelines about the selection of subjects for programmes, the media centres by and large make their own decisions about the subject areas for the educational programmes.

Thus, the structure of educational telecommunications for higher learning in both Canada and India is broadly. In both cases, the concerned ministry for higher education has set up the respective projects. In India, the UGC-INSAT TV Project, and in British Columbia, the Knowledge Network. In both countries, a committee is responsible for the overall policy decisions, especially funding allocations. Such committees also review the type of programming that goes on air. However, the actual decisions on programming are made by the individual universities and colleges which provide programmes for telecast. The major difference between the two is that in British Columbia, the telecasts consist of distance education/open learning course-related programmes, whereas in India, the telecasts are meant as 'enrichment' support material for regular college students.

B. The Communication Institutions Responsible for Such Use.

In this study, "communication institutions" refers to the bodies which administer the dissemination of education programmes. By this definition, the institutions responsible for the educational use of telecommunications in the province of British Columbia, Canada, and in India, are the Knowledge Network and Doordarshan respectively.

As regards the two communications institutions, there is a significant difference between the two regions. This is related to the overall structure and availability of telecommunications in the two regions.

In British Columbia, the Knowledge Network has been established as the educational telecommunications network of the province. It has the franchise to uplink its programmes to the Anik C3 satellite, from which the cable companies in the respective regions downlink and provide the programme with an essential channel for set reception. KNOW thus functions as a television station similar to other stations like the CBC station, BC-TV, Chek 6, etc. This is possible because in the overall telecommunications infrastructure in Canada, there are various stations that operate independent of each other, providing general viewing audiences with more than one channel. Thus, almost twenty four hours of programming are available for educational television (ETV).
The Knowledge Network is largely funded by the provincial government. It was created by legislation through the Ministry of Advanced Education & Job Training. Thus it is ultimately responsible to the provincial government for its actions, though considerable autonomy has been given it in terms of administration.

In India, there is at present only one channel available for television throughout the country. This channel carries the programmes of Doordarshan, which is the sole television transmitting organisation in the country. The Countrywide Classroom is telecast on Doordarshan's national network for two hours every week day.

Currently, Doordarshan utilises the satellite facility available on the INSAT 1C (1B till October 1989) to uplink its programmes, from which they are downlinked to the various receiving stations located in cities and towns throughout India. Thus in India, Doordarshan is the communication institution responsible for the transmission of educational television. The programmes are packaged by the Jamia Milia Islamia unit of the UGC-INSAT TV Project and sent to Doordarshan's office in New Delhi for the uplink. Since Doordarshan is a wing of the Ministry of Information and Broadcasting, the Countrywide Classroom programmes are required to adhere to the norms of governmental and national policy.

In terms of production facilities, the Knowledge Network has its own studio and production staff. However, programmes targeted specifically at students are produced and/or acquired by the concerned universities and colleges. For such programmes, KNOW's production facilities are utilised if the concerned educational institution contracts to use them. However, KNOW plans the schedule of the television courses for each viewing season, fitting them into its overall broadcast schedule that includes general educational programmes.

In India, Doordarshan's production facilities are not utilised for the production of the Countrywide Classroom programmes. Production is undertaken by the media centres of the UGC project that are located in the various universities. The programme schedule is planned periodically and released every fortnight - by the Central unit of the Project and not by Doordarshan. There is a fixed time slot in the national network for these programmes, i.e., one hour each at 12:45 p.m. and 4 p.m.
C. The Manner in which Technology is Utilised for Education.

The manner in which technology is utilised is discussed in terms of:

(i) the selection of the subject areas for programme production
(ii) the production / acquisition process
(iii) the scheduling and telecast of the programmes.

(i) The Selection of Programme Subject Areas:

In both India and British Columbia, the selection of subject areas is done by the educational institution that is providing the programming. That is, in British Columbia, where the programme are in support of specific distance education courses, the university/college decides which of its courses will have such ETV support. The decision to use television thus rests with the individual course directors and subject experts. It depends on the availability of funds, the suitability/need for television support, the practical availability of programmes and/or production technology, and the interest and inclination of the course directors.

The actual selection of subject areas is done largely by the experts interested in using television to support their courses. The appropriateness of television is not a major factor, though it plays some part. For example, the faculties of education and nursing in the provincial universities have used television to support their courses. Many of these programmes are 'talking heads' and serve to reach distance education students who cannot otherwise attend classroom lectures. Other courses, in forestry for example, use the visual qualities of television to describe factors which student may not otherwise get an opportunity to study at first hand.

In India, subject areas for programming are selection by each media centre which produces programmes. The Director/Co-ordinator of each media centre invites various faculty members of his/her respective educational institution to plan programmes as serve as subject experts. Sometimes, the idea for a programme may be generated from among the production personnel of the media centre. Unsolicited programme suggestions can also be made to the media centres by subject experts. Due to the great need for programming for the Countrywide Classroom, almost all programme scripts that are feasible for production are selected.

Both regions (India and British Columbia) face the possibility of duplication of subject areas, since individual institutions/media centres are making the programming decisions. However, such duplication is sorted out in each case by the respective
central committees. In British Columbia, television programmes for similar courses offered by different universities are commonly produced and/or acquired. This decision is taken during the meetings of the Executive Committee of the Knowledge Network. In India, the central committee of the UGC INSAT-TV project discusses forthcoming productions during its regular meetings. Sometimes, though, two different media centres may produce programmes on the same subject, like for example, an introduction to psychology. However, since the treatment of the subject is unique to each production (since the programme is not produced according to definite syllabus or course) such duplication is sometimes allowed.

(ii) The Production/Acquisition Process.

The production of educational programmes is undertaken by educational institutions in both the regions under study. That is, the Knowledge Network in collaboration with/or individual educational institutions on their own in the case of British Columbia, and the UGC's various media centres in India, produce the programmes targeted to college-level students.

Production facilities available are not elaborate but are adequate for simple productions. This is partly due to the smaller amount of finances available and partly to the non-commercial nature of the programming. In British Columbia, the studios available for educational production are those belonging to KNPW, to the University of British Columbia, the University of Victoria, and the B.C. Institute of Technology. Simon Fraser University does not have a production studio though it has some equipment. The studios contain essential equipment in terms of lighting, cameras, and audio and video editing and mixing. Of these studios, the one at KNOW is the most frequently used. In fact, producers at UBC and UVic also prefer to use KNOW's studio and staff. Though it was the pioneering studio in the province, the BCIT studio is now largely unused for education programme production.

Besides programmes produced at the KNOW studios, the services of freelance producers are often enlisted by educational institutions. Depending on the funds available, programmes are sometimes produced at distant locations if necessary.

In India, each of the media centres has its own studio, editing facilities and production staff. The EMRCs have larger studios and 3-4 producers, whereas the AVRCs have smaller studio and one producer each. Both in-studio and location production work is undertaken by the media centres. Due to pressure of demand on programming, some
centre produce more "talking head and in-studio type of programmes. Each centre is given a target number of programmes to be produced per month. Most of the centres find it difficult to maintain their targets, though the ratio of indenously produced programmes to acquired programmes is improving. Many centres utilise the services of freelance producers as well.

Due to the paucity of inhouse productions, both the Knowledge Network and the Countrywide Classroom have to acquire a substantial amount of programming from external sources. In British Columbia, 90% of KNOW's programming is acquired. This includes general programming. As far as the curriculum-based programming is concerned, the decision to acquire rather than produce is taken by the course director of the distance education course in which the television programmes are to be incorporated. Often, good programmes are already available in the market, and it is usually cheaper to acquire than to produce. For example, the History series, "World At War" produced by Thames TV (A British company) has been successfully used to support History courses on World War II offered by both Simon Fraser University and the Open University. Most of the acquired programming is from Canadian distributors (who may also distribute foreign productions). Canada's National Film Board is also a source of external programming. Many production companies belong to England, some to Australia New Zealand and other English and French speaking countries. Because of the public broadcasting system in the USA it is not usually possible to acquire educational programmes from that country.

India's UGC Project also acquires a considerable amount of programming from external sources. The decision to acquire a certain amount of programming was taken because of the realisation of the limitations of indigenous production facilities. Even though the Countrywide Classroom are telecast for only two hours per day, six days a week, the amount of programming required to fill these slots is considerable. When the Project began in 1984, about 60-70% of its programmes were acquired. However, due to the increased rate of production from the UGC media centres, the percentage of acquired programming is now reduced to about 40%. Programmes for Countrywide Classroom telecast are acquired from various countries, including the USSR, USA, England, West and East Germany, France, and Canada. Indigenous independent productions are currently not available; moreover, independent producers wishing to freelance educational programming usually channel their productions through the UGC's media centres.
The Scheduling and Telecast of Programmes.

For the purpose of transmitting the educational programmes to the target audience, the given technology in the two regions has been utilised (rather than setting up a separate infrastructure for such transmission). That is, the available satellite facility in the respective regions has been used.

In British Columbia, the Knowledge Network has its own transmitting station, from which the programmes are uplinked to the Anik C3 satellite. Since cable companies in Canada are required to provide an essential channel to educational broadcasters, KNOW's programmes are available to television audiences almost throughout the province.

In India, the Countrywide Classroom is one of the programmes that are telecast on Doordarshan's national network channel. The programmes are packaged into one hour slots consisting of three programmes of approximately twenty minutes duration each. The introduction to and conclusion of the day's programmes is done by the UGC INSAT PROJECT OFFICE in Delhi. The programmes are fitted into their scheduled hours, i.e., 12:45 p.m. and 4 p.m., and are uplinked to the INSAT 1C for transmission throughout the country.

The scheduling of KNOW's programmes is done at the offices of the Network. Thus, in British Columbia, the communication institution schedules and transmits the educational programmes. In India, the scheduling is done by the educational institution i.e. the UGC Project's central unit at Delhi.

III. THE LEVEL OF SUCCESS ACHIEVED

To be able to determine how "successful" the utilisation of telecommunications for education has been, it is necessary to operationally define the term "success". In this context, the success of educational television can be judged by the following factors:

- Amount and types of technology
- How many educational courses are using television support
- What type of subject areas do the television programmes cover, and, do they fulfill the mandate given to ETV in the region
- Is the use of television for higher education seen as a positive exercise by its users, i.e., administrators, teachers, and students
A. Amount & Types of Technology.

The amount and types of technology in place in the two regions has been discussed above in section II B.

In terms of production technology, the types of studios and equipment available in the two regions, British Columbia and India, are basic. The facilities are just about adequate for educational production. Not much scope is provided for elaborate productions. Producers have to rely on their own creativity rather than on special equipment.

In British Columbia, KNOW has a character generator with a variety of type faces and a special editing console. However, if funds permit, a producer can use the services of external agencies. In fact, the final editing and sound mixing for most of KNOW's programmes is done by an outside agency.

In India, the UGC's media centres have been provided with the essential production equipment according to the number of programmes they are required to produce per month. There is a given budget for each programme within which all the expenses of production should be covered. Hence in India as well, producers depend on their own creative abilities rather than on special equipment.

B. Amount of Courses Using ETV.

The determination of the amount of courses that utilise ETV can be done only for British Columbia. In India, the ETV programmes for higher education are not linked to any specific courses but are rather meant for the "general enrichment" of college students.

In the case of British Columbia, the use of ETV in the total framework of distance education can be determined by quantifying how many such courses have some amount of television support. If we look at the available figures they are as follows:

<table>
<thead>
<tr>
<th>Institution</th>
<th>No. of courses with TV/total course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simon Fraser University</td>
<td>32/45 (33.6%)</td>
</tr>
<tr>
<td>University of British Columbia</td>
<td>17/?</td>
</tr>
<tr>
<td>Emily Carr College of Art &amp; Design</td>
<td>4/20</td>
</tr>
<tr>
<td>North Island College</td>
<td>33/?</td>
</tr>
<tr>
<td>University of Victoria</td>
<td>Education 6/75</td>
</tr>
<tr>
<td></td>
<td>Nursing 9/?</td>
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<tr>
<td></td>
<td>Public Adm 5/6</td>
</tr>
<tr>
<td></td>
<td>Computer Sc 6/?</td>
</tr>
</tbody>
</table>
Telecollege ..... 11 during Summer '89
Open University ..... 14/99 (14%)
Open College ..... 15/124 (12%)

(Figures are based on information available for semesters of 1988-89).

From these figures, it can be said that television support is not provided for a majority of the distance education courses in British Columbia. Moreover, for the courses for which television support is provided, viewing of these programmes is not mandatory for most of such courses. Only a very few courses like ECCAD's "Colour: An Introduction: and "Mark & Image" have mandatory viewing of the television series.

On the other hand, KNOW's quote of curriculum-based programming is full up by the present amount of programmes and 50% of its total airtime (spread through the year) is given to such programmes. The five categories of time slots for the curriculum-based programmes are allocated based on the newness of the programme, its potential number of student viewers, the number of times it is being repeated, and so on.

Thus while on the one hand ETV is not used widely to reach distance students at the post-secondary (or, higher) level, on the other hand the present capacity of the regional network to transmit such programming is being well utilised.

While in the Indian situation the amount of ETV support to specific courses cannot be calculated at present, a word can be said about the amount and nature of time given to the Countrywide Classroom programmes on Doordarshan.

Initially, one hour was provided during that period of the day when no other programmes were telecast i.e., 12:45 - 1:45 p.m. Later, when it was protested that this was not a suitable time, a repeat telecast was introduced at 4 p.m. This has not helped matters much and the timings continue to be inconvenient for a majority of the target viewers, i.e., college students.

C. Types of Subject Areas Covered by ETV.

What are the criteria applied to the selection of subject areas for television support? Is there any specific policy that determines the focus on certain subjects? From the findings of the study, the following points are noted:
a) There is a broad-based policy regarding the selection of subject areas in both regions under study. In British Columbia, curriculum-based programming is approved for funding and transmission by the Board of the Open Learning Agency. The policy is to provide adequate exposure to the various subject areas and courses that propose to utilise television support. In India, subject areas for ETV production are decided by the central committee of the UGC-TV Project. The initial policy statement made by the Task Force in 1983 mentioned the need to concentrate on and promote science-based subject areas.

b) In practice, the types of subjects for which television programmes are provided depends largely in the decision of the various educational institutions. This in turn depends on the initiative taken by individual professors and course directors to include television programmes as course material (which also depends on the availability of funds) or in the case of India, on the initiative taken by the directors of the UGC media centres and/or professors in the respective universities to produce programmes on certain particular subject areas.

Thus, looking at the list of programmes produced and transmitted on ETV in the two regions, a variety of subject areas is found.

In British Columbia, the subject areas for ETV programmes firstly depends on the subjects for which distance education courses are available. Each university/college makes its own decisions as to which of its courses will have ETV support. At the University of British Columbia, most of the Nursing courses have television programmes as support. Education courses have some amount of television support. Agricultural Sciences, Forestry and Animal Sciences, as well as History and Literature also have some amount of television support.

At Simon Fraser University, the courses for which television support is available covers almost the whole range of distance education subjects. Archaeology, Communications, Criminology, Education, Geography, History, Kinesiology, Statistics, Political Science, Psychology, Sociology & Anthropology, and Women's Studies.

The Open University uses television support for courses in the Fine Arts (similar to the ECCAD courses), History, Humanities, Mathematics, Physics, and the Social Sciences. The Open College uses television for courses in the Biological Sciences, Social Studies, Computers, Business Management, Restaurant Management, Office Administration, courses for Heavy Duty Mechanics, and Journeyman Upgrading courses.
In India, the subject areas on which programmes are produced is based on decisions taken by individual co-ordinators of the media centres under the approval of the central committee. The co-ordinators resorts to one of two methods to decide on subjects for programmes:

(i) They generate subject areas from among their own producers and/or invite freelance producers.

(ii) They invite professors and teachers from their parent university who are interested in producing programmes, to come forward with scripts.

Thus programming on a wide variety of subject areas are telecast on the Countrywide Classroom. During 1988-89, these have included: Sciences, Social and Behavioural Sciences, Engineering and Technology, Fine Arts, Humanities, Agriculture, and Medicine and Surgery. Over a quarter of the programmes are in multi-disciplinary subjects like Environment, Education, etc. (According to a content analysis done at the AVRC, Hyderabad in August 1989).

Thus it is seen that while the official policy in the two regions under study has laid broad guidelines for the selection of subject areas and courses for ETV, in actual practice there is no structured apportioning of ETV between the various subjects. Rather, it is the individual interest taken by course directors and professors of particular courses, and in the case of British Columbia, the availability of funds for particular subject areas of distance education.

D. The Successfulness of ETV As Seen By Users.

In order to be termed "successful", ETV should be seen to be useful by its users. By "users" is meant those who utilise television technology for educational purposes. Under such a definition, the users would be identified as those persons concerned with education, i.e., educational administrators, teachers (professors and course directors) and students who administer, formulate, and use television support for their courses.

In British Columbia, the administrators are those officials in educational institutions who can take a decision on the use or non-use of television in support of distance education courses. These officials are at the level of vice chancellors, principals, departmental heads, and directors of the various distance education centres. The officials interviewed during the course of data collection for this study were the Principal of the Open College, the Director of Student Services of the Open
Learning Agency, the of Humanities & Sciences Programmes at the Open University, the Director of Information Technology at the Open Learning Agency, the Director of the Distance Education Office of the Faculty of Education at the University of British Columbia, the Director of the Centre for Distance Education at Simon Fraser University, the Director of parttime studies at the Emily Carr College of Art & Design and the Vice President of the Open Learning Agency who is also the General Manager of the Knowledge Network. With the exception of the General Manager of the Knowledge Network, all these officials have to consider the overall administration of distance education and see where and how ETV can be used. In considering the larger picture, therefore, these officials do not place much importance on television as a primary medium for distance education.

The Open University has largely relied on print and correspondence and has the least amount of television support for its courses. The administrators at the Open College, also do not put too much emphasis on the use of ETV. Therefore, according to the Open College's Principal, KNOW is used to promote the fact that there are opportunities for open learning. The principal also feels that since the Open College's students are less committed to learning than regular university students, they will be less motivated to view educational television programmes.

The Director of Distance Education at the University of British Columbia's Education Faculty is more positive about the use of ETV. He also reported that a majority of the students view the programmes on both Education and Nursing. The Director of the Centre for Distance Education at Simon Fraser University did not place much importance on TV programmes. The Vice President of the Open Learning Agency (who is also the General Manager of the Knowledge Network) was much more positive about the usefulness of ETV. She felt that television was playing a significant role in the learning scheme for distance education students in the province. The Director of Parttime Studies at ECCAd was also positive about the successful use of television for education.

The professors and course directors who opt to use television support for their courses state that the courses are considerably enriched by the extra knowledge that is provided by the television programmes. In many cases, television provided visual information that students cannot otherwise avail of.
The tutors assigned the distance education courses with television support also state that such support provides a useful dimension to the courses, and considerably enhance the course content. Some course instructors feel that most students do watch programmes, other state that they have to remind students to watch. Students who complete questionnaires (circulated by the respective institutions) state that they find television programmes interesting and useful - however, since all students do not return the questionnaires, this may not be representative of the whole student body.

In India, since the Countrywide Classroom programmes are not linked to specific courses, and since student viewing is neither mandatory nor supervised, the success of the ETV programmes can be guaged only by statements made by the larger body of college teachers and students. University and college teachers state that the programmes are good; however, the inconvenience of the airtime prevents them from being able to watch regularly. The students also feel that the ETV programmes are useful; as seen in the preceding study, college students are aware of the Countrywide Classroom, have a positive attitude towards the programmes, and are motivated to watch them. But the inconvenient is the major deterrent to regular viewing.

Thus, the "successfulness" of the ETV programmes in the two regions is chequered. While the production, information content, and transmission of the programmes is not faulted in both the regions, on the one hand in the case of British Columbia the students are not much motivate to view, since the programmes are considered additional and not mandatory material to their distance education courses; on the other hand in India there may be a potential motivation to watch among students, but due to lack of accessibility in terms of timings and availability of television sets, and also partly because the programmes are not built into specific syllabi or courses, college students do not watch regularly.

IV. POSSIBLE AREAS FOR EXCHANGE OF GUIDELINES BETWEEN THE REGIONS.

Given the above factors, is it possible for one situation to provide guidelines to the other? Are some factors working successfully in one region which could be replicated towards similar success in the other? The ongoing administration of educational communication provides an experience of the utilisation of television against which the achievement of policy goals and the appropriateness of the use of the technology can be assessed. Based on such assessment, one region can provide guidelines to the other if there are some shared characteristics between the regions regarding which there can be an exchange of ideas, particularly as a help towards future use.
Therefore, the possible areas for exchange of guidelines can be considered under the two broad heads of:

A. The formulation of policy and goals.
B. Appropriateness of technology for higher education.

A. The Formulation of Policy & Goals.

The two regions under study, India and Canada, have a common overall goal for the use of communication technology in education, i.e., the spread of education to those who do not otherwise have access to it. Both regions are characterised by the existence of populations in remote areas (though the numbers in India are much greater than those in Canada). There is also a paucity of educational resources and an unequal distribution of such resources.

However, there are three basic differences between the two countries. Firstly at present, India has a single policy for the whole country for ETV, whereas in Canada, each province sets its own goals. Secondly, in India the programmes are targetted to the regular students of undergraduate colleges, and are meant for "general enrichment", whereas in Canada (and in British Columbia, the specific region under study) the programmes are targetted to distance education students and are linked to specific distance education courses as complementary or mandatory support. Thirdly, India's scant resources allow the existence of only one channel for television, on which educational programming is given some time, whereas in Canada there is a comparative abundance of technology and ample scope for the provision of separate educational channels.

In terms of the formulation of policy, India could look at the Canadian method of linking ETV for students to specific distance education programmes. There is a need for India to have more specific goals for ETV. In its present form in the country, ETV is meant for general enrichment of the curriculum. This makes for a lack of focus in actual implementation. Hence, if the policy could define a relationship between the use of television and specified educational content, administrators would have clear guidelines, producers would know what to focus upon, and teachers and students would be able to use ETV in a structured manner. Policy makers could identify the student audience more clearly and specifically, and link programmes to particular courses - B.Sc., or B.Com., or technical/vocational courses - as is done in British Columbia, ETV could serve a definite purpose.
Another pointer India could take from the Canadian situation is the expansion of funding avenues for programme production. In British Columbia, while the provincial government allocates funds for approved programme proposals, educational institutions also seek funding from other sources. This helps to produce better programmes and enable the use of distant locations and specialised equipment if necessary. If India could allow educational institutions to seek funding for programmes from sources other than the UGC-TV Project (which would provide the basic funding) it may help to

a) speed up the present rate of indigenous production,
b) allow for more programmes to be produced, and
c) improve the quality of indigenous programmes.

The Canadian situation where ETV is the concern of provincial government rather than of the federal government makes for fragmentation of educational programming through the country, and a repetition of programmes by separate educational institutions. Instead, if like in India (where too there is a situation of Education being administered by the State since it is on the Concurrent List) Canada could have a national policy for ETV, with a central body like the CBC providing for programming and telecasts, the programmes could be availed of by distance education institutions across the country who could request for the same programmes for similar courses. Already, regional co-operation among distance education institutions to share programmes production and transmission facilities is existent in some regions Like in India, the initiative for countrywide co-operation could be taken by the federal Department of Communications.

B. Appropriateness of Technology Use.

"Appropriateness" can be defined as the practically of use, in terms of the necessity of technology for educational courses, the need for specific equipments, the requirements of programming for the time allotted, and the availability of resources.

The appropriateness of technology depends basically on the type of technology that is affordable and/or available. The term "Communication technology" can be applied to a variety of hardware and software items, from satellite infrastructure, transmission and relay systems, to production studios, personnel and programmes.
In both the regions, the decision to use television for education was largely based on the fact that satellite facility was available which made telecast time possible in the respective areas. Thus, the decision to utilise satellite technology was practical to the extent that spare capacity was available for the purpose. However, it should be noted that it was the availability of the technology rather than the felt need for education that motivated the commencement of educational telecasts.

Television technology is highly capital-intensive. Countries whose political framework is based on democracy have opted to vest their governments with the control and administration of matters that pertain to large sections of the population – and broadcasting, as a means of communication, is one such area. Both Canada and India have followed this pattern. Thus, the governments have invested in the technological infrastructure. The "appropriateness" of the technology here is thus considered in terms of financial expenditure, i.e., affordability. In this context, it was more financially expedient for Canada to invest in communication technology than India. If specific expenditure on educational television is considered, this is mainly in the form of production technology (since the transmission technology is set up by the government and in the case of Canada also by the privately-owned cable companies). In Canada, particularly in British Columbia the provincial ministry for higher education has provided for the production and transmission facility in terms of the Knowledge Network. However, individual educational institutions are responsible for the production of their respective programmes. Hence, some of the institutions, especially the larger ones i.e. the universities, have set up basic production studios. Others utilise the studio of the Knowledge Network.

In India, the UGC-TV Project is a centralised unit which has set up media centres in various universities. These centres serve as production houses for programmes. Finances for the infrastructure and for programmes production are thus channelised through the central unit of the UGC project. A fixed amount is allocated for programme production. However, various programmes have various expenses. Also, expenses vary according to the availability of equipment and expertise at the centres. Hence, India could, as is done in Canada, make allowance for outside funding for educational programmes, by inviting collaborative efforts from other training, educational and research institutions and from business and industry if relevant. However, in the present system of education policy, this may not be possible.

Both India and Canada acquire fair amounts of programming from outside of their own production studios. In India, acquired programming amounts to about
40-50% of the total programming of the Countrywide Classroom, while in British Columbia, for the curriculum-based programmes, about 60-70% is acquired. Acquisition of programming as opposed to programme production is justifiable in terms of costs. However, the issue of cultural differences projected in such programmes should be considered. Both countries should make an attempt to produce more of their own culture-specific programmes. Such programmes would also be more in tune with the local syllabi for courses, as compared with programmes based on foreign syllabi.

Television technology also involves the viewing process. The question of viewing accessibility is basic to the appropriateness of ETV. In Canada, most students will possess television sets; however, the transmission of the ETV channel may not reach some of the more remote areas of the province. Provision has been made at the regional centres for distance education for viewing of the programmes. Hence, British Columbia students by and large have access to ETV. In India, the accessibility situation is different. Individual ownership of sets is relatively high in urban towns, but in rural areas it is still rare. Secondly, though sets have been provided to colleges who request them, the location of the set (in the college premises) and problems of custody and maintenance hinder actual viewing by students. Thirdly, the time of the telecasts is inconvenient and a major hinderance to student viewing.

While the basic disparities that prevent widespread availability of personal television sets cannot be easily removed, colleges which have been provided with sets should be encouraged to make viewing facilities available to students. A change of timings of the telecasts would also help to increase the viewing of India's Countrywide Classroom programmes.

CONCLUSION : FOR THE FUTURE

The utilisation of television and other capital-intensive technology for education depends on several factors. In the twentieth century, telecommunications has brought about the Information Society, a society which the developed world has created and the developing world would like to emulate. However, even in the developed world, the utilisation of telecommunications for educational purposes receives low priority from both public and government. In the developing world, while governments profess to be committed to such educational use, the reality of scarce resources hinders optimum utilisation of technology for education.
Canada is today experimenting with newer technologies like teleconferencing and telewriter systems for education. In India, the basics of ETV operations are just about being straightened out. Meanwhile, planning for the production of non-broadcast mode (i.e., Video) syllabi-based programmes has been initiated during 1987-88. This project is presently under design and production at various universities through UGC's media centres. There is also talk of beginning experimentation with the use of teleconferencing for higher education. While it is inevitable that India invest in telecommunications for development and education, the country should proceed with caution, keeping in mind local needs, and utilising scarce resources judiciously. The major policy need is to find a syllabi-specific method of using the power of television to make programmes relevant to India's college students. As in the developed world, if ETV is directly linked with distance education, it would serve a specific purpose and be practically utilised to a much greater extent.