<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Where has all the technology gone?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author(s)</strong></td>
<td>Bentley, James E.</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>1997</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10220/2753">http://hdl.handle.net/10220/2753</a></td>
</tr>
<tr>
<td><strong>Rights</strong></td>
<td></td>
</tr>
</tbody>
</table>
Where Has All the Technology Gone?

Ladies and Gentlemen, when I commenced primary school, more than 50 years ago just after World War II, the first item upon which I learned to write symbols in the form of letters was called a "slate". A slate is a flat 10 inches x 12 inches piece of the black coloured mineral known as slate, in a wooden frame. My peers and I were able to scratch images on the slate with a slate pencil, made also from slate. In learning our ABC the letters which we practiced writing on the slate were wiped off with a cloth, rendering the slate reusable. If my memory serves me correctly, the "slates" were obtained from India and China, both developing countries.

This early technology was appropriate to our situation at the time, it enabled us to learn the letters of the alphabet and was practical as there were no running costs and negligible wastage.

After a few months with the slate, our teacher adopted the use of the blackboard. This resembled a very large slate. It varied in size and was generally 3 to 4 yards long and about 4 feet wide. It was made of wood painted with a special black paint and attached to the wall or supported on a stand. The teacher wrote on the blackboard with pieces of chalk a white substance similar to soft limestone.

The blackboard was a great advance in visual technology for teaching and was accompanied by the use of exercise books and pencils by the students. This was an important experience with the print medium, utilised in all educational systems and which was the world’s first mass medium. The slate and blackboard underwent developmental stages, firstly to the "greenboard", then to a "white-board" and later to a white-magnetic-board, a whiteboard and magnetic board combined.

Despite the coming of the Information Age, the Computer Age, the Multimedia Age and the globalisation of media and information systems, and more than fifty years of development after the great world war, the slate and blackboard technology still exists widely across the globe and is still in use in more classrooms than those in which the symbols of modernity, the computer and television screen, are utilised.
What does this imply? One thing it implies is that despite the great advances in technological development made by humans, the broad sharing of the great achievements and transfer of new technology are slow and difficult to realise. It also implies that, since the manufacture of new technologies is mainly for monetary gain, the developing countries lag behind the technologically advanced industrialised countries. In addition it implies that the developing countries of the south are compelled to utilise forms of technology long after they are outdated in the north.

The accelerated development and use of the new communication and information technologies, it has been said, will bring great improvements to society and to individuals on a global scale and affect how people receive their education and training, how people conduct research, how we conduct our business activities, how we carry out our employment, how the medical profession operates, how we are entertained, how we grow our food and many other areas including how we conduct our daily activities.

However, the acquisition of new technology goes hand in hand with economic status and many developing, underdeveloped and least developed countries are in a quandry about how to participate in the advanced Global Information Infrastructure systems to the extent that they would like. Many are concerned that they will be left behind on the communication superhighways struggling to keep old technology operational.

When considering the countries of South Asia, South-east Asia and East Asia, and if we refer to the top 15 countries of the world in terms of Per Capita Income (PCI), we find Japan and the Republic of Korea high in the rankings - second and fifth respectively (USA, Japan, Netherlands, UK, Rep. of Korea). This relates closely to the high-technology status of these two countries.

If we consider the top 15 countries of the world in terms of the Human Development Index (HDI), representing a combination of life expectancy, educational attainment and income, we find that Japan is placed third in the rankings of industrialised countries (Canada, USA, Japan, Netherlands, Norway). In the rankings of the developing countries, Hong Kong, Republic of Korea and Singapore are first, fifth and tenth respectively.

Since Japan, Hong Kong, Republic of Korea and Singapore have high technology status, the HDI rankings also support the view that the countries with high development status are technologically advanced. Does this mean that the poorer countries of the world will not participate fully in the new information and communication systems until their economies are suitably enhanced?
The constraints that lesser developed countries are experiencing in terms of access to the new information and communication technologies is of concern to UNESCO. For the new systems to be considered true global systems, access needs to be more widespread than the main cities of the industrialised countries and higher economic status developing countries. The lesser developed countries need considerable help to improve their telecommunication infrastructures, to acquire appropriate modern computerised technology and to achieve adequate human resource development in order to attain suitable levels of participation in the use of high-technology systems. Will an adequate number of industrialised countries genuinely assist this process?

The president of UNESCO’s International Programme for the Development of Communication (IPDC), Mr Torben Krogh, stated in a recent article published by UNESCO, "The accelerating technological convergence between telecommunications, computing, information products and mass communication, points to something resembling an information superhighway. But as the picture stands today, globalisation has only affected the most privileged segments of the population."

Mr Krogh also stated that, "Nothing is more important than giving all human beings the tools to cope with the changes in the communication scene".

UNESCO’s Assistant Director General for Communication, Mr Henrikus Yushkiavitshus, expressed the opinion that, "Despite the rapid spread of research network facilities in some developing regions particularly Asia and Latin America, about 95% of the E-mail volume (and a much greater part of the volume for more advanced services) over research networks originates and terminates in industrialised countries."

Mr Federico Mayor, the Director General of UNESCO also expressed some concern. He said, "Cyberspace has no frontiers, limits or rules. Theoretically it belongs to everyone. A supremely efficient vector of communication and a place where freedom of thought may be exercised, it welcomes all who use it. But it is only accessible to those who have the requisite electricity, computers, telephone hookups and know how."

He also said, "The poor countries are under no illusions. They know that the global village and the electronic village are not the same thing. Is new information technology really the tool for development it is claimed to be?"

When considering the development of new technology systems in the developing countries of Asia one needs to think and plan very carefully when establishing new projects. The Asian region is characterised by great diversity. In it are found some of the
worlds most rapidly developing economies as well as some of the world's most poor countries. Asia includes the world's most populous and crowded countries and a number of small developing island nations. The region utilises a wide range of indigenous languages as well as accommodating a number of foreign languages.

Through its international mandate to deal with communication development for more than 180 Member States (42 of which are in Asia), UNESCO has had to consider its development priorities carefully. When setting up new technology projects under its global Communication Programme it is simultaneously dealing with traditional technologies which are the most affordably appropriate in many countries' development status situations.

Under these conditions there have been a series of moderate size development projects established for countries in Asia through UNESCO's International Programme for the Development of Communication, commonly known as IPDC. IPDC is controlled by a 39 member Intergovernmental Council elected through UNESCO's General Conference. The funding the Council receives to allocate to project proposals submitted to it each year, is raised through voluntary contributions mostly from UNESCO's European Member States but also from a number of Asian countries.

I would like to briefly comment on several of UNESCO's IPDC projects aimed at developing computerised information systems and appropriate operational expertise in Asian countries.

In the area of News Agency Development their have been projects to computerise the central systems of the BSS and UNB news agencies in Dhaka, Bangladesh. The new systems were designed in Asia and composed of technology elements manufactured in Asia. They have proved to be more efficient and able to handle a greater volume of news and information than the tired old teleprinters which they replaced.

In the Lao Peoples' Democratic Republic UNESCO communication projects have served to upgrade and modernise the KPL National News Agency from Morse Code and teleprinters to facsimile and computerised systems. With varying telecommunication development status in the 16 provinces of Laos, an appropriate range of news information systems have been put in place. There is a combination of computer and HF transmitters; facsimile (only at the capital); and a combination of computer and modem where suitable quality telecommunication links are available.

The current phase of the project is designed to complete the computerisation of the KPL News Agency headquarters systems in Vientiane. Besides providing the possibility to efficiently connect to internal and external news and information sources, the new computer and modem systems have facilitated the use of
the local language in the internal news agency operations. This feature is distinctly advantageous to the local personnel and to the national character of the news agency.

In the early stages of implementation, are two projects concerned with the development of other international information networks in the region. There is the Asia-Pacific Communication Network project funded by UNESCO and implemented in cooperation with the Asian Media Information and Communication Centre (AMIC). This project proposes to create a computerised international information network between well established documentation centres and libraries in the Asia-Pacific Region. This network, when fully operational, will cooperate with the global network known as COMNET - the International Network of Documentation Centres on Communication Research and Policies.

Also in the early stages of implementation is an activity under the title "Asian Press Institutes' Project". This UNESCO funded project is designed to create a computerised network involving the established professional Press Institutes in 10 countries in this region including the press institutes of the Philippines, Thailand, Malaysia, Indonesia, India, Nepal, Bangladesh, Mongolia, Korea and Japan. It also includes a link with Fiji where the first Pacific island press institute, the Fiji Journalism Institute, was established several years ago. The Asian Press Institutes' Project is being implemented through the auspices of the Press Foundation of Asia (PFA) at whose premises in Manila the initial Home Page of the professional grouping will be established.

There are also a number of new submissions, two of which I would like to single out - without mentioning the names of the submitting countries. One is concerned with the provision of global access to the news and information of 90 community newspapers of a particular Asian country through the World Wide Web, and the other concerned with the development of a 14 ethnic language feature service network aimed at rural community newspapers and interprovincial exchange in an Asian country.

These are some examples of projects that are being carried out through the UNESCO communication programme via the UNESCO Kuala Lumpur Office and the International Programme for the Development of Communication (IPDC). There are similar activities, established via the same mechanism, being conducted by UNESCO communication offices in other regions of the world.

As mentioned earlier this communication development work is being carried out by UNESCO through funding provided by voluntary contributions to IPDC from UNESCO Member States. IPDC commenced operations in 1980 and has organised 17 sessions of its Intergovernmental Council. Since its inception it has received
contributions to its Special Account from 48 countries and funded more than 300 projects. The largest contributor has been Norway which has provided more than 30% of the overall funding. Norway is followed by the Russian Federation (USSR), Denmark, Japan and France. Up to the end of 1996, 18 industrialised countries provided 93% of the overall contributions. The remaining 7% was provided by 28 developing countries and 2 least developed countries.

There were 7 donor countries from the South, Southeast and East Asia. These are Bangladesh, China, India, Indonesia, Japan, Korea and Pakistan. They accounted for 15% of the overall contributions to the IPDC special account.

The voluntary contributors to IPDC have set an exemplary example and especially admirable are the contributions from the least developed and the developing countries. They have contributed national funding on a voluntary basis and in true multilateral tradition did so without knowing how much they would be contributing to each of the projects processed by the council. They are interested in communication development and they were willing to contribute without special conditions under the auspices of UNESCO and IPDC.

18 Industrialised countries have indicated their interest in communication development through contributing funding at international level to the IPDC special account. So have 28 developing countries and 2 least developed countries. All have shown faith in the UNESCO mechanism through their contributions to IPDC. Their example would need, however, to be followed by many other countries as IPDC is only able to meet a small portion of the communication development needs of the world’s developing countries.

The need for the technology rich countries to assist the technology poor countries is as large as ever and enhanced contributions are required through the many multilateral and bilateral mechanisms that exist if the further widening of the gap, between the communication and information rich and the communication and information poor of this world, is to be avoided.

My prediction is that the gap will continue to widen and the new technology systems will continue to mainly be accessible to the economically strong in the industrialised world and partially accessible to the stronger economic elements of the developing countries.

Conventional electronic communication media systems or "old technology" will continue to be utilised alongside the new systems and may be improved upon through the use of digital
techniques. Terrestrial AM mediumwave and shortwave transmissions will not disappear as quickly as some think. They will continue to exist for some years to come as will conventional terrestrial FM broadcast transmissions.

Modern satellite systems and up-to-date computer systems, even if costs of utilisation and purchase decrease, will continue to be out of reach of the majority of the people of the world and will mostly be in the control domain of the higher economic status countries.

The new technology systems will not experience the same penetration as the "slate and blackboard technology" which penetrated to the farthest reaches of the globe and was viewed more as a necessity than as a power mechanism or a symbol of modernity.

In conclusion, I would like to show you the old technology which developed from the slate and blackboard era. A white-magnetic-board. It is slightly larger than the old monochrome slate, it is used in the present-day classroom and capable of colour image generation. This is still available alongside a wide range of computer equipment in Kuala Lumpur where the world's first Multimedia Super Corridor is in the process of establishment.

It is interesting to note how the shape of the white-magnetic-board resembles the shape of the modern television screen - or is it the other way around? It is also interesting to note that the white-magnetic-board is manufactured in Japan and the colour markers in South Korea.

References:
- Human Development Report 1996, UNDP.