

Multiway Interactive Distance Education Network

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Extension of an existing interactive satellite distance education system using the multipoint videoconference system is described. Design and implementation are based on former experience in setting up a multidimensional e-learning system using both synchronous and asynchronous techniques.

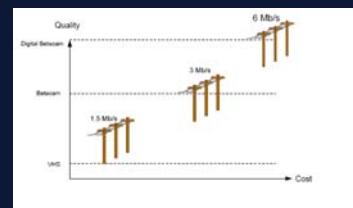
In addition to the satellite network, Internet is used as a communication pipe interconnecting geographically distributed classes in order to accomplish a unified "virtual classroom". Thus, the cost is reduced, and further remote groups of students have the opportunity to be included in the network.

Technical Considerations

Bandwidth

Most organizations already have high-speed LANs able to support streaming. Moreover, remote users can benefit from the growth of telecommunication bandwidth.

Today, most home consumers access the Internet at rates ranging from 28.8 Kbps to 56 Kbps over analogue modems.

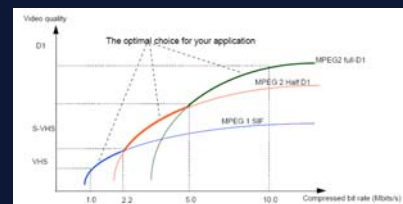


Correlation between Quality of the Video Source and Bandwidth needed for Transmission

Technical Considerations

Current networks cannot carry raw digital video, as it is still too large to be manipulated.
Potential achievable solutions are:

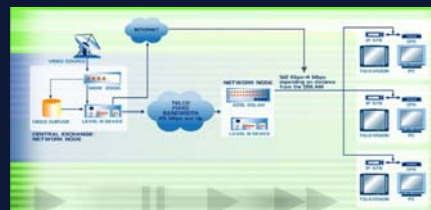
- # video compression #
- # streaming technology #



Correlation between Input Resolution, Bandwidth, Compression Rate and Video Quality

Technical Considerations

The integration of the distance education network was done by using services of asynchronous techniques, in order to enhance the capability of material deriving from synchronous training to be archived and used. Alternatively, the user can connect to the server at a later date and view the archived version of the videoconference.



Distance Education Network

Educational Considerations

Most important issue in the "virtual classroom" is establishing communication and interaction among the participants.

To this aim the following methods are used:

- # oral communication between remote classrooms #
- # text chat for the individual participants #
- # creation of text discussion groups, allowing continuous interaction during and after the seminar #

At a later phase, interest could focus on the development of a distributed infrastructure media on demand server, which will also contain information about future educational activities, such as time plan deliver course and pre-instructional material (e-learning grid).

<http://chemistry-heritage.chem.auth.gr>