Suan Dusit Internet Broadcasting (SDIB): Educational Innovation in Knowledge-Based Society

Assistant Prof. Dr. Pannee Suanpang
Faculty of Science and Technology
Suan Dusit Rajabhat University
Bangkok, Thailand
e-Mail: pannee_sua@dusit.ac.th

Abstract- This paper describes the design and implementation of the “Suan Dusit Internet Broadcasting” (SDIB) project, recently introduced at Suan Dusit Rajabhat University with the goals of increasing educational opportunities for students in rural areas and to support life-long learning for adult education throughout Thailand. The SDIB system is part of an ongoing research and development effort seeking to develop educational innovation in Thailand. It consists of four channels broadcasting twenty four hours a day, the content being transmitted both as audio and video (live and VDO on demand). Though still in the evaluation stage, the project is an on-going one with plans for future integration with other educational support systems of the university. Finally, SDIB will be new education innovation in knowledge-based society.

Keywords- Educational Innovation, Internet Broadcasting, Knowledge-Based

What is Internet Broadcasting?
Internet Broadcasting is also known as Cybercasting, Netcasting, Webcasting, Unicasting and Streaming Media. As well as reprocessed audio or video that is transferred from radio or TV to the Internet, Internet Broadcasting commonly includes broadcasting new or original content both ‘Live’ and ‘VDO On Demand’ to the Web (Vin, 1998).

More specifically, Internet Broadcasting, following the definition of “webcast” in Wikipedia (Wikipedia, 2007), can be thought of as “… a media file distributed over the Internet using streaming media technology. As a broadcast may either be live or recorded, similarly, a webcast may either be distributed live or recorded. Essentially, webcasting is broadcasting over the Internet. The generally accepted use of the term webcast is the “transmission of linear audio or video content over the Internet”. A webcast uses streaming media technology to take a single content source and distribute it to many simultaneous listeners/viewers. The largest webcasters include existing radio and TV stations which simulcast their output, as well as a multitude of Internet-only stations. The term webcasting is usually reserved for referring to non-interactive linear streams or events. Rights and licensing bodies offer specific webcasting licenses to those wishing to carry out Internet broadcasting using copyright material. Webcasting is also used extensively in the commercial sector for investor relations presentations (such as Annual General Meetings), in E-learning (to transmit seminars), and for related communications activities. However, webcasting does not bear much, if any, relationship to the idea of web conferencing which is designed for many-to-many interaction. The ability to webcast using cheap/accessible technology has allowed independent media to flourish. There are many notable independent shows that broadcast regularly online. Often produced by average citizens in their homes they cover
many interests and topics, from the mundane to the bizarre. Webcasts relating to computers, technology, and news are particularly popular and many new shows are added regularly”.

**Suan Dusit Internet Broadcasting Project**

**Project aims**
The SDIB project seeks to:
- Develop new educational innovations for supporting distance and life-long learning for students of the Suan Dusit Rajabaht University.
- Increase learning channels for the delivery of information and knowledge to local communities.
- Utilize information and communication technology (ICT) to increase learning and teaching efficiency and effectiveness.
- Broadcast new knowledge that can be applied in order to improve the quality of life for people in rural areas.

**SDIB System development life cycle**
The Suan Dusit Internet Broadcasting project was developed by following the concepts described by Shelly, Cashman & Rosenblatt (2003) in System Development Life Cycle: SDCL. The five phases of the development cycle are shown in Figure 1. They are:
1. **System planning** to perform a preliminary investigation to identify the nature and scope of the system or problem. A feasibility study was conducted to review the anticipated costs and benefits and to recommend a course of action based on operational, technical, economic and time factors.
2. **System analysis** to build a logical model of the new system. The SDIB system analysis process gathered data from various internal sources and a system requirements document was produced, describing management and user requirements, costs and benefits, and outlining alternative development strategies.
3. **System design** to create a blueprint satisfying all documented requirements for the system. The SDIB had a user interface designed for it, and all necessary outputs, inputs, process and infrastructure to support the system were identified.
4. **System implementation** to construct the SDIB system. This included converting data to the new systems’ files, training users, and performing the actual implementation and transition to the new system.
5. **System operation and support** to maintain changes, correct errors and adapt to changes in the environment.

**How does the SDIB system work?**
There are three fundamental methods that can be used for transmitting data on the Internet, namely Unicast, Broadcast, and Multicast. The Unicast method transmits data (or a packet) from a sender to a single receiver; broadcasting transmits data from the sender to an entire sub-network; multicasting enables the delivery of data from the sender to a set of receivers that have been configured as members of a multicast group in various scattered sub-networks. In the early stage of their development, radio and television broadcast applications required a one-to-many data distribution model in which data flows from a single sender to many receivers simultaneously, but not the whole sub-network (Vin, 2007). Present audio and television broadcast applications typically use Unicast and Multicast distribution networks, as shown schematically in Figure 2.
Network Design
The SDIB project was implemented using the network equipment shown in Figure 3, including 5 servers and 6 TBy of disk storage.

Media content of the SDIB
There are three TV channels for educational programs and one radio channel. Users can access the SDIB web via the link http://sdib.dusit.ac.th/index.html. The contents of the four channels are summarized below:
• Channel one: Teaching and learning activities at Sa-Tid La-Or U-Tid primary school. There are many interesting learning activities that will be beneficial for teachers in primary schools. Most of the content of this channel will be useful for teachers in Early Childhood Care Centers, of which there are some 17,000 in Thailand. The SDIB project will provide TV, set-top-box and ADSL links to around 1,000 Early Childhood Care Centers as part of the pilot project. This stage will be completed around February 2008. It is expected that the SDIB
project systems will provide improved quality and a greater quantity of resource materials for teachers to apply in their teaching within the Early Childhood Care Centers. Programs include many TV shows such as the Brian-based learning activities, information on how to effectively use toys for children, food and nutrition for children, and art for children. Additionally, there are many ‘live’ programs such as ‘Kindergarten Fantasia’ which broadcast children’s activities to their classrooms; parents will also be able to watch these program ‘live’ from the Internet. Figure 3 shows an example of a typical transmission on Channel 1, a “toys for children” program.

Figure 3: SDIB Channel 1: “Toys for children” program

- Channel two: Migrated VDO Conference systems into the SDIB project. This channel broadcasts lessons in general subjects for first year students via the VDO Conference systems. Students are able to access VDO contents both ‘live’ and via ‘VDO on Demand’ for reviewing their learning. Additionally, this channel provides important information for supporting learning such as the ‘ICT Insight’ program, ‘Student Top-Hit’ program, etc.
- Channel three: Broadcasts TV variety programs which focus on university strength areas. Programs include ‘Food and Thai Cruise’, Top-Hit Suan Dusit Poll, English for More, Sign (Hand) Language, Thailand Tourism, Food and Beverage, etc.
- Channel four: Transmits radio programs which have migrated from university radio stations. Included in the many radio programs are as Art of Children, ICT for Children, Watching Thai Politics, Knowledge Management for Fun, etc.

CONCLUSION

The Suan Dusit Internet Broadcasting project is developing and introducing educational innovation for Thai higher education. Implemented after a careful analysis of the needs of Suan Dusit Rajabhat University and the broader community following a 5-phase life-cycle model, the project is currently in the Implementation and Testing Phase. There are some 50,000 current users. It is expected that in full operation this project will be broadcast to some 17,000 Early Childhood Care Centers throughout Thailand, providing a valuable resource for teachers and people
in the local communities. The SDIB project evaluation will be carried out at the end of year 2009, including its impact on teaching and learning in the University and other sectors. The research results will be published upon completion of the evaluation process.

REFERENCES