



The Science and Essential of Multi-Media Laboratory

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Abstract:

Media lab (often referred to as new media lab, media art lab or media research lab) is a term used for interdisciplinary organizations, collectives or spaces with the main focus on new media, digital culture and technology.

The definition of media lab is widely discussed and is open for debate. The term can describe a space, a cultural organization as well as a community or a way of working in which collaboration and experimentation plays a crucial role. Media labs are usually:

- *Multidisciplinary: they gather participants of multiple disciplines and of diverse professional backgrounds*
- *Open: they stimulate open knowledge exchange and sharing in the spirit of free culture, often using or producing open source softwares.*
- *Experimental: the outcome of projects is often not defined before they are started. They allow for tinkering.*
- *Sites of non-formal learning practices, where learning by doing is stimulated.*

In this article the author wants to point out the basic of Multimedia Laboratory through this article in the world of Science and emerging Technology under the Globalization wind.

Keywords: *Globalization, Multimedia Laboratory, NGOs, Technology*

1. Introduction

As technology advances and hardware and software improve, it becomes much more feasible to integrate multimedia directly into classroom activities and the core curriculum. Understanding why, when, and where multimedia is appropriate and beneficial is the first step toward successful implementation. Implementing multimedia activities into the classroom requires careful planning. In this presentation, we discuss the uses of the DDD-E Model (Decide/Design/Deliver and Evaluate) as a guide for teachers and different component of multimedia tool and set up.

2. Definition of Multimedia

Weidong Xhang(2003) defined “Multimedia is hot topic in education because it represents the latest technology and introduces into the classroom whole new ways of thinking about curriculum, interactions with students and even the nature of learning itself.” Multimedia can mean any kind of file or document, either a text or spreadsheet that has audio /video effects or

“an interactive information cafe” whatever it is not, it certainly is the most promising technology in education.

3. Definition of Multimedia Laboratory

Multimedia laboratory is a showroom featuring the latest multimedia technology that is hardware with software, including tools and applications. Various conditions in the developing world prevent the ready availability of such technology.

The oxford dictionary defines “a resource Centre as a place where a stock or supply of materials or assets is stacked.”

4. Meaning of Multimedia Laboratory

There are many definitions of multimedia laboratory some of us can remember when multimedia meant using a slide-tape program, where a beep signified the display of the next 35mm slide (others might remember flannel boards or 8-track tapes, but we won't go there), we will define multimedia laboratory/ classroom as the integration of text, graphics, animation, sound, and/or video.

Using this very broad definition of multimedia, multimedia in the classroom could include Power Point presentations that are created by the teacher, commercial software (such as multimedia encyclopaedias) that is used for reference or instruction, or activities that directly engage the students in using multimedia to construct and convey knowledge. For the main purposes of multimedia has focus on engaging students in the use of multimedia to construct and convey knowledge.

4.1 Examples of Multimedia in Classroom Laboratory

1. Students using concept-mapping software (such as Inspiration) to brainstorm
2. Students using a spreadsheet or graphing calculator to record data and produce charts
3. A small group of students creating a digital movie to demonstrate a procedure
4. A class website that displays student artwork
5. Students scanning their hands and importing the images into PowerPoint for a presentation about fingerprints

5. Multimedia Laboratories in India

“Multimedia can stimulate more than one sense at a time, and in doing so, may be more attention-getting and attention-holding”. In India, many schools have to be overcrowding classroom so a single teacher for a class is not possible to stimulate and attention-holding of all student is difficult. It needs multimedia classroom and laboratory for effective teaching learning experience.

5.1 Multimedia Classroom first in India

Delhi is FIRST State to implement the following innovative interventions/projects under Sarva Shiksha Abhiyan that is,

- Khulja Sim Sim Project – Computer based learning station for as Alternative Innovative Education Centres for out of school children and adult learners.
- Setting up of multimedia classroom/lab in all government schools.

- In house development of multimedia animated classroom content.

5.2 NGO's

The initiative began over two years back. Technology adoption in Indian schools has witnessed a clear pattern with schools moving on from merely acquiring PC Labs to moving technology for teaching purposes right inside the classrooms. It is envisaged that a large segment of Indian schools, predominately Tier I and II, are now ready to explore one on one computing environment inside the classrooms and would be open to adopt solutions that enable them to effectively improve students' learning experiences. To this extent, Intel and NGO and private companies have been deeply engaged in developing a pedagogically sound solution for one on one computing in classrooms. Such as Intel has developed the Classmate PC that meets with the precise learning needs in schools.

5.3 Multimedia Laboratory Classroom in India

The state of the art Multi-media classroom, better known as 'SMART ROOM' puts at the disposal of the teachers and students the latest technology available in teaching-learning process. The 24 hours internet facility helps teachers to bring the world itself into the classroom. The use of the Information Technology in the classroom makes learning more individualized, interactive, flexible, permanent and creative. It equips teachers with pedagogical skills; make them progressive, competent and resourceful. The teaching and learning process is also reinforced using audio-visual aids like maps, models, ordinary projectors, television and video. Educational videos are screened regularly to the students on various subjects.

Multimedia in education is a format for presenting information using a combination of images, sound, audio and text. According to the Florida Center for Instructional Technology, "Multimedia activities encourage students to work in groups, express their knowledge in multiple ways, solve problems, revise their own work, and construct knowledge." Multimedia-based projects have become common in school classrooms. School technology curricula include multimedia presentations as a required skill for students. The Tennessee technology standards state that students in grade seven need to "Use productivity tools to create effective documents, such as slide shows, posters, multimedia presentations, newsletters, brochures, or reports, for defined audiences."

6. Need of Multimedia laboratory (In Classroom)

Multimedia activities encourage students to work in groups, express their knowledge in multiple ways, solve problems, revise their own work, and construct knowledge. The advantages of integrating multimedia in the classroom are many. Through participation in multimedia activities, students can learn.

- Real-world skills related to technology
- The value of teamwork
- Effective collaboration techniques
- The impact and importance of different media
- The challenges of communicating to different audiences
- How to present information in compelling ways
- Techniques for synthesizing and analyzing complex content
- The importance of research, planning, and organization skills

- The significance of presentation and speaking skills
 - How to accept and provide constructive feedback
 - How to express their ideas creatively
- There are, however, some constraints to using multimedia in the classroom, including:
- Technological resources, both hardware and software
 - Technological skills, for both the students and teacher
 - Time required to plan, design, develop, and evaluate multimedia activities

6.1 Steps in Implementing Multimedia Activities

Implementing multimedia activities in a classroom environment requires some planning. Steven Covey offered this advice in his book, *Seven Habits of Highly Effective People*: “To begin with the end in mind means to start with a clear understanding of your destination. It means to know where you're going so that you better understand where you are now so that the steps you take are always in the right direction.”

Adopting that advice to the implementation of multimedia activities means that you should begin by determining the desired outcomes and defining how they will be measured, and, then, design the learning activity. This is often referred to as "Backward Design" since the process begins with outcomes and assessment measures (Wiggins and McTighe, 1998). This course will implement backward design through the model illustrated in the table below -- DDD-E or Decide, Design, Develop, and Evaluate.

Although it is helpful to use this model as a guide, in "real-life" the steps and phases may overlap or they may occur in a different sequence. Also note that the Evaluate phase encompasses all of the other phases -- in other words, it is on-going throughout the process.

| PHASE | ACTIVITIES |
|----------|---|
| DECIDE | Decide on relevant standards and benchmarks Decide if multimedia is appropriate Decide which learning outcomes are desired Decide on appropriate assessment measures |
| DESIGN | Inventory available hardware and software Determine the grouping strategy and roles Specify length/duration of activity Design a lesson/unit plan with a multimedia activity |
| DELIVER | Media development skills Classroom management and configuration Facilitating multimedia activities |
| EVALUATE | Student checklists Evaluation options Reflection and revision |

7. Function of Multimedia Laboratory

- To provide means to integrate educational technology into the curriculum.

- To create classroom applications those are learner centered and that support high curriculum standard for all students.
- To provide students with a working knowledge of technological world.
- To develop an understanding of and capability to handle tools. Materials and processes integral to technological systems such as communication, production, power/ energy and transportation systems.
- To teach students to apply the knowledge, tools and skills in designing, constructing and evaluating solutions to real world technical problems.
- To facilitate design and fabricate teaching-learning material and application software need for classroom teaching.
- To select, acquire, purchase and store resources for the instructional resource Centre.
- To classify and index material for easy retrieval and condemning outdated and redundant material.

8. Benefits of Using Multimedia Laboratory

8.1 Benefits of Using Multimedia laboratory in Education

"Multimedia can stimulate more than one sense at a time, and in doing so, may be more attention-getting and attention-holding."

8.2 Benefits for Students

- Engaging and motivating.
- Provides opportunities to try new things.
- Incorporates additional useful skills into the curriculum.
- Heightens project-based learning opportunities.
- Provides classroom accessibility outside the classroom.
- Benefits audio/visual learners.
- Appealing and manageable to students with special needs and at-risk students.
- Allows for showcase of student work.

8.3 Benefits for Teachers

- Enables teachers to turn teacher-centered lessons into student-centered.
- Provides teachers with more opportunities to be facilitator.
- Easily adaptable to all learning levels.
- Decreases classroom management issues.
- Provides opportunities for students to have a 'real' audience.
- Places onus of responsibility back on the student.
- Allows teachers to deal with photocopying limitations.
- Provides a forum for teacher sharing and feedback.

8.4 Benefits for Parents

- Enables parents to monitor homework and upcoming assignments.
- Helps parents feel more connected.
- Offers parent a place to view student's work.

9. Resource in Multimedia Laboratory

| | |
|-------------------------------|--|
| Library Resources | Textbooks, Refereces, Encyclopaedias, Newspapers, Educational Magazines, Periodicals and Journals. |
| Hardware facilities | Epidiashope, Overhead projector, LCD projector, Slide Projector, Microscopes, Television, videocassette player, Tape Recorder, Radio, Computers – monitors CPU’s Printers, Scanners. |
| Software | Maps, Charts, Photos, Psters, Microfilms, Slides, Cassettes – Audio, video, Filmstrips, 16 mm Films, OHP Transparencies’ |
| Teaching – Learning materials | Different types of boards – magnetic board, Peg board, Bulletin board etc. Specimens in biology museum teaching aids of all subjects improvised apparatus multi – media packages. |

9. Multimedia Laboratory Tools Used in the Classroom

9.1 Computer Hardware

According to the Commonwealth Educational Media Center for Asia, “Multimedia requires high-end computer systems. Sound, images, animation, and especially video, constitute large amounts of data, which slow down, or may not even fit in a low-end computer. Unlike simple text files created in word processing, multimedia packages require good quality computers." When rendering video, for instance, a computer with a slow CPU takes such a long time to complete its task that students become bored and lose interest in their project. Similarly, computers without a sufficient amount of hard drive space cannot store large video files. Generally, desktop computers work most efficiently with large multimedia files. However, high-end laptops can be configured to work well with multimedia applications.

9.2 Computer Software

Multimedia software is a key component of the multimedia toolkit in the classroom. Multimedia-capable computers should be loaded with audio, video and image-editing software. Multimedia presentations range from audio-based podcasts to flash animations to digital videos. A wide range of commercial multimedia software is available as well as many free open-source multimedia applications that are suitable for use in classrooms. Many free educational tutorials are available for use by both teachers and students.

9.3 Other Hardware

Multimedia classrooms require a host of electronic devices in addition to computers and software. Common classroom tools include digital cameras, scanners, video cameras, DVD players, audio recorders and LCD projectors. Also devices that can be used in the multimedia classroom include cell phones and iPods. These tools require the training of both teachers and students for effective use. Multimedia projects may require all or some of these devices depending on the nature of the project and the skill levels and ages of the students.

9.4 Interactive Whiteboards

Teachers use interactive whiteboards as teaching tools and presentation devices. Interactive whiteboards look like traditional whiteboards, but respond to the touch of a special pen or finger. The computer screen is projected onto the whiteboard and teachers manipulate the computer from the interactive whiteboard. Some whiteboards use wireless technology, which makes them ideal for use with wireless-capable computers.

10. Setting up of Multi-Media Laboratory in Classrooms

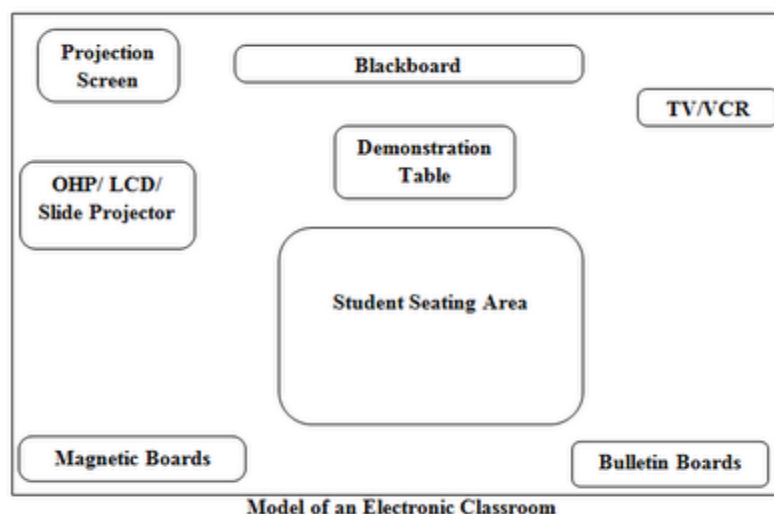
The primary purpose of the multimedia laboratory is two-fold: 1) to provide technological support for all academic activities, 2) to facilitate the training of teachers in the effective integration to technology into teaching and learning. There are three components of a multimedia laboratory (Resource Centre).

- Model electronic classroom,
- A Multi-Media Presentation Room,
- Mobile Multimedia station.

10.1 Model Electronic Classroom

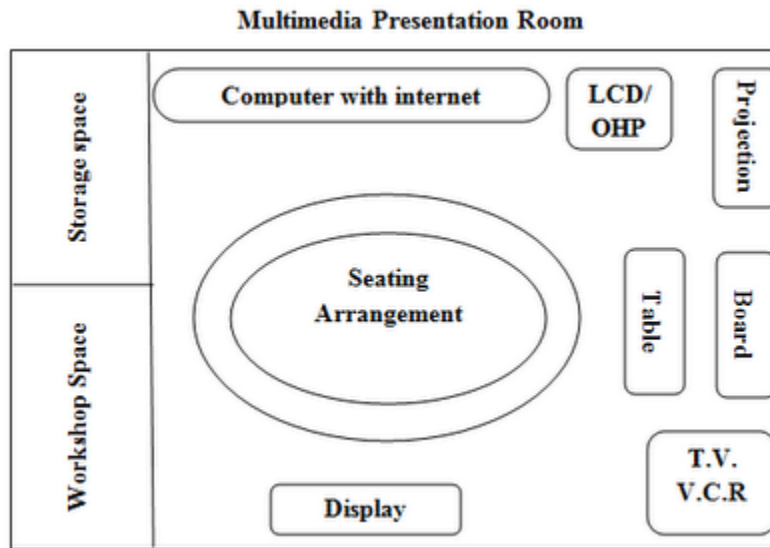
The future schools would all go 'Electronic'. In model electronic classroom predict that students will see and hear teachers on computers with 'remote learning' being the trend. Assert that students will access 'classrooms' on their computers and learn at times convenient to them.

In a poor country like India this is a dream which requires a herculean mission to fulfill. But for the present we could think of the following as a model classroom layout with provisions for electronic media.



10.2 Multimedia Presentation Room

An ideal multimedia presentation room should have at least a computer with CD ROM, Internet connectivity, a VCP, a LCD, a video projection system OHP's, Film strips Projectors etc. The room should have a conference type arrangement where people can sit around the center table and outer perimeter if need be.



10.3 Mobile Multimedia Station

The computer, VCP, LCD and Video Projection System are fixed on a mobile cart and can be moved from one classroom to another for multimedia presentation/demonstrations. Kreual (1998) says a “great educational technology school lab would include:

- Ergonomic “Kid sized” table and chairs,
- Sufficient number of computers with maximum memory,
- Head phones for each computer,
- Printers/scanners for each computer,
- Fastest possible Internet access,
- A teacher station with board attached for LCD presentation,
- Working spaces for a small group collaborative work,
- Adequate lighting and air circulation
- Sound proofing,
- A bright, colorful and inviting atmosphere.

11. Conclusion

The ultimate goal of any plan for educational technology should reflect two intentions, equitable access to technology for all students and educators, and comparable levels of educational technology for all schools.

In setting up an educational technology resource Centre, three aspects have to be addressed.

- Determination of the equipment required – hardware and software.
- Securing required funds so to cover initial costs such as maintenance and technical assistance.
- Providing professional development for educators so that technology is utilized and implemented meaningfully.

Thus technology can become the force that equalizes educational opportunities of all children regardless of location and social and economic factors.

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