

Proposed techniques towards effective teaching and learning

P.Chakrabarti, *MIACSIT* and C.T.Bhunia

Abstract—It is the duty of technical staff to ameliorate the status of prevailing laboratories. The laboratories should be made in such a fashion so that there is support for even video-conferencing. There should be interactive sessions and during teaching each topic should have some related links. The live projects can be carried out in groups followed by regular consultation with respective project investigators[1]. The laboratory room should be well equipped with a range of technological aids including a classroom network. There should be adequate space for proper seating arrangement of the students. The classrooms should be made air-conditioned for proper maintenance of the equipments therein. The teaching methodology should be carried out in an effective manner[2]. There should be arrangement for video conferencing within the smart classroom. There should also be some device for constant video recording of the entire lecture[3]. We have also pointed out the cost analysis and corresponding activity chart towards completion of the stated work .

Index Terms—video-conferencing , technological aids , cost analysis , activity chart.

I. IMPROVEMENT OF COMPUTER LABORATORY

A. Proposed laboratory assignments methodology

It is the at most duty further technical staffs to represent the laboratory as a place of interest for gaining hands-on practical knowledge to the students. The assignments should be prepared by the respective faculty members in such a way that it serves ; (I) Practical approach on the lesson taught in the classroom and (II) Generate innovative idea within the mind of the students. The assignments should be first check by the students themselves and the papers will be recheck by the subject teacher, It serves the quality of assessment by the students. Among the assignments there should be some intentional mistake in the question from the faculties point of view these will serves the observation power and optimum variant techniques from the ideal one from the students point of view, thereby developing there own imagination as well as innovative idea.

The subject teacher should have a list of marks based on those given by the students immediately after the submission of assignments and before the publication of marks. This will serves the confidence level estimation from the student's

Dr.P.Chakrabarti is Associate Professor in Computer Science and Engineering department , Sir Padampat Singhania University, Udaipur, India (email- prasun9999@rediffmail.com)

Prof.(Dr.)C.T.Bhunia is Emeritus Professor and Director , Bengal Institute of Technology and Management , Bolpur-731236 , West Bengal, India (email-ctbhunia@vsnl.com)

point of view. In the copies the subject teacher should mentioned some points for up-gradation of the answers along with the normal correction. At the end of each session there should be some lectures given by the students, which will demonstrate their ability of realigning the subject matter. There should be another provision of making the assignments by the students themselves. This will serves the gain since the student has to go thoroughly throughout the lesson.

B. Involving students in the part of delivering lectures

There should be some tutorial laboratory classes where the students will give lectures and evaluation will be done by the other students and the concerned teacher. Knowledge exchange facility can hence be achieved. There can be some idea from the students point of view which will help even the teacher for his own improvement in the related topic. This will serve another purpose. "Charity begins at home". Similarly "Teaching begins at student level". The students will have the scope of improvement in giving lectures.

C. Proposed technique towards effective teaching

There should be an arrangement so that student : processor ratio is 1 : 1. The processor at the teachers end should be connected with each of the students machine through LAN so that the current slide of the teachers lesson can be seen on the monitor of the students processor. There should be also another provision of getting information from other related links and those information can be store in a database. This will serve the purpose of improving teaching ability, thereby getting other techniques or lessons for understanding the current topic.

D. Need for video conferencing in laboratory classes

There should be some provision of conducting EDUSAT program so that renowned teachers from all over the world can give lectures and those can be seen by the students. There should be some interactive sessions too. The equipments required for this facility are projector, projector screen, speakers and microphone along with obvious fast Internet connection.

E. Provision of setting up mini library within the laboratory

The purpose of setup of mini library is to helps the students to carryout their work smoothly if there is urgent need of consultation during the class. This will serve the purpose of optimum time management along with other ideas for demonstration of the related topic.

F. Routine check up of the laboratory equipments

There should be some technique for online assessment of the prevalent laboratory equipments on a daily basis. There should be some message box where as soon as the investigator inputs any comments that will be convey to the laboratory incharge in the form of an alarm which is nothing but a body sensor, i.e. a chip. Realizing the alarm the laboratory incharge will immediately investigate the problem.

G. Missing of equipments from the laboratory and proposed solution

There should be some hidden cameras in the laboratory for constants monitoring. In spite of making such arrangement if there is any case of missing of any instrument, then each students attending the laboratory on that particular day should give the amount to the laboratory account. The laboratory incharge will take the amount equivalent to price of the missing equipment from the account and transfer the rest to the student benefit fund account.

II. EFFECTIVE TEACHING IN CLASSROOM

A. Proposed sitting arrangements for the students

The seats of the students should be in the form of a gallery. The number of seats in each row will be unique but the level of altitude of the seats of each row will be in increasing order from that teachers end. Hence there will be no difficulty for the last benchers to follow the lecture.

B. Proposed Infrastructure of the classroom

The classroom should be made air-conditioned for proper maintenance of the processors for the complete session. The seats should have a writing desk in a folded manner and in-front of each there should be a processor The fans and light should be in adequate number. The window glasses sun protective and there should be some exhaust fan in the classroom. White board and marker pens are preferred instead of black board and chalks. There should be LCD, projector with screen in each classroom. We propose a technique for cleaning the classroom. In the floor there should be some arrangement for inflow and outflow of water and accordingly after cleaning in the roof, there should be some heater which will help the wet floor to become dry one within a short span of time.

C. Involving students in the part of delivering lectures

There should be some tutorial classes where the students will give lectures and evaluation will be done by the other students and the concerned teacher. Knowledge exchange facility can hence be achieved. There can be some idea from the students point of view which will help even the teacher for his own improvement in the related topic. This will serve another purpose. "Charity begins at home". Similarly "Teaching begins at student level". The students will have the scope of improvement in giving lectures.

D. Proposed technique towards effective teaching

There should be an arrangement so that student : processor ratio is 1 : 1. The processor at the teachers end should be connected with each of the students machine through LAN so that the current slide of the teachers lesson can be seen on the monitor of the students processor. There should be also another provision of getting information from other related links and those information can be store in a database. This will serve the purpose of improving teaching ability, thereby getting other techniques or lessons for understanding the current topic.

E. Need for video conferencing in classroom

There should be some provision of conducting EDUSAT program so that renowned teachers from all over the world can give lectures and those can be seen by the students. There should be some interactive sessions too. The equipments required for this facility are projector, projector screen, speakers and microphone along with obvious fast Internet connection.

F. Provision of setting up mini library within the classroom

The purpose of setup of mini library is to helps the students to carryout their work smoothly if there is urgent need of consultation during the class. This will serve the purpose of optimum time management along with other ideas for demonstration of the related topic.

G. Key aspects of redesign of an optimum classroom teaching environment

The key features should include the following :

- Study-team building, cooperative learning approach
- Group Homework/class review
- Group-solved challenge problems
- Introduced CAD demos into the course lectures using a wireless, mobile laptop platform
- Modified class assignments to contain use of CAD tools
- Provided an Online (Web based) environment for collaboration and evaluation

H. Available tools and delivery methods

The technology does not teach itself, the technology does not learn itself, therefore the instructor still needs to prepare the students to learn using the best practices in pedagogy. In the following table we show the overall picture relating technologies with the available delivery methods.

The different tools used in the classroom are:

- Instructor computer
- White Board & markers
- Speakers and microphone
- LCD / Projector
- External network connection (Internet or other resources)
- Internal network connection (classroom network, wireless is recommended)
- Student devices (Desktops, Laptops)
- Control application

However the tools are useless without proper content delivered by the following means:

- Static presentations (PowerPoint slides)
- Dynamic presentations (Instructor local interaction)
 - Demonstration of computer tools
 - Windows Journal (behaves like a whiteboard)
 - MS Journal
 - Inspiration
 - Macromedia Flash
 - Specialized Applications
 - Etc...
- Instructor research and remote applications (Internet)
- Student local applications
- Student research and remote applications
- Student control and assessment

III. CONCLUSION

The faculty member, technical staff and students in the laboratory can use the existing technology in a more effective way, not only as enhanced slide projector, but as a sophisticated content delivery network. During the lesson the students expressed interest in the capabilities to enhance teaching qualities that should be there inside an ideal teacher. The videoconference facility will also help to improve teaching methodology. The teacher and students in the classroom can use the existing technology in a more effective way, not only as enhanced slide projector, but as a sophisticated content delivery network. During the lesson the students expressed interest in the capabilities to enhance teaching qualities that should be there inside an ideal teacher. The videoconference facility will also help to improve teaching methodology.

REFERENCES

- [1] C.T.Bhunia (2002), "Introduction to Knowledge Management", Everest Publications, Pune
- [2] C.T.Bhunia (2005), "Changes for Technical Education", Atlantic Publishers, New Delhi
- [3] C.T.Bhunia (2004), "Knowledge Management: Why and How", J IETE Tech Rev., New Delhi , Vol. 21 No.1. Jan-Feb04 , pp25-37