2.3.2 - Teachers use ICT-enabled tools including online resources for effective teaching and learning

Some of the enablers and tools used by teachers for effective teaching and learning are as follows.

Smart-Boards for Digital Teaching

Each class has smartboards for providing digital teaching and learning effectively.

DSPACE (Digital Repository)

All important administration documents are available and hosted in digital format on a server named as DSPACE. This is a digital repository of all documents. This server runs on open-source software. The documents can be searched easily using a keyword. The documents and data segregation, department wise, community wise, etc. is supported. This facilitates centralized data storage accessible from institution intranet.

NPTEL Server

It is also proposed to have additional lab with Thin Client Configuration for students to have seamless connectivity with NPTEL Server. The NPTEL Videos are hosted on a dedicated server to facilitate learning.

Software Packages

There is a wide variety of software packages available to the students and faculty for their academic and research work. These packages include several technical softwares such as MATLAB, Simulink, CATIA, ANSYS, AutoCAD, MS Office Suite, project management, etc. An environment of wide variety of operating systems such as Windows 7 Professional, Windows NT Server 4.0, Windows 2000 Server and LINUX has been established to make students familiar with latest operating systems.

Computer, Laptop, Printer, Projector

There are more than 200 High End personal computers connected over the campus LAN under some of the latest Network Operating Systems running on some of the latest Xeon based Rack Servers. A very high-capacity Network Storage facility integrated with an automated data backup and recovery system caters to the data storage requirement of all the users. Every faculty member, every lab and almost every staff member is provided with a printer. There are sufficient numbers of LCD projectors and high-quality scanners to facilitate teaching learning process. Every student and faculty member has a high end networked personal computer or laptop at his or her disposal.

Wi-Fi facility

The entire campus has been Wi-Fi enabled with a **speed of 1 Gbps** to provide mobility to the users in accessing various services available on institute's network. This Wi-Fi network allows faculty, staff, and students to log on to the Internet at any point of time. This wireless layer (Wi-Fi) is placed on top of highly dense network with high level of security using username password-based authentication. A Firewall is also placed to provide higher security. A storage server with VPN based access and username password-based authentication is also in place.

LAN

The institute also has gigabyte LAN with fibre optics backbone having more than 200 nodes connected onto it. All the computer laboratories are on this institute wide LAN. There are more than 15 high end manageable network switches which handle the internal data traffic. The computing facilities are available on different platforms, such as MS Windows and LINUX. The campus network is supported by 2 high speed servers with SAN Storage. This server also supports labs running Linux and open-source software for providing the necessary services. These servers provide a core layer of services like Internet access, and file/print services, etc. for every workgroup (faculty, students, staff, etc.).

The college faculty members have taken following innovative and entrepreneurship initiatives using ICT enabled tools.

Dr. R. B. Buktar has developed an innovative tool based on Augmented Reality (AR) for teaching Engineering graphics (EG) course to first year students. The tool assists the students to develop an ability to create and read graphical representation of engineering drawing which can be challenging to many young engineers. The system aims at improving the spatial awareness and creating interest of learning EG in students. An AR
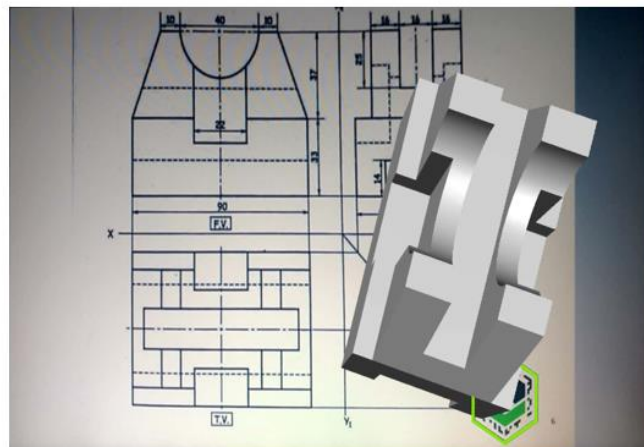
Augmented reality assisted Engineering Graphics book

assisted engineering graphics book has been developed.

Prof. Satishkumar Barot has developed "SEAMBooks" Mobile Application as a entrepreneurship activity. It can be used as an ICT tool for teaching and learning. It is developed   with the overall aim of increasing the effectiveness of teaching and improving students' learning. All the SEAMBooks are having colourful contents with detailed explanation in simple, easy to understand language. Users can raise their queries anytime through App and will be reverted within 48 hours. Contents of all the Books are hyperlinked at microlevel for easy navigation. Presently, the application offers engineering books for University of Mumbai, Dr Babasaheb Ambedkar Technological University, Sardar Patel College of Engineering. Refer Appendix XVI for details.