

IPR

**ICT
IN
EDUCATION**

**ACADEMIC
SERVICES**

BASIC CONCEPT OF INTELLECTUAL PROPERTY RIGHT (IPR)

- ▶ IP - property in ideas or their expression. A creation of the mind, (technol.innovation, a poem, a design etc.)
- ▶ IPR protects the rights of individuals/groups/institutions who have transformed their ideas into property by granting rights to the owners of those properties.
- ▶ Current century - the century of knowledge.
- ▶ A nation's ability to translate knowledge into wealth and social good through innovations will determine its future.
- ▶ Creation and processing of knowledge - Innovation is the key.
- ▶ Generation, evaluation, protection and exploitation of IP is of much significance in today's world of knowledge explosion.
- ▶ Four categories of IP - Patents (inventions), copyrights (literary work), trademarks (supplier/manufacturer identity), trade secret (private affair)

1. PATENT

- ▶ *Legal monopoly granted for a limited time to the owner of an invention.*
- ▶ Most rigorous (strictest) IPR
- ▶ Product or process.
- ▶ Exclusive right for a number of years to produce a good or use a particular process (method).
- ▶ Can be used EITHER through their own business....
- ▶ OR by charging a license fee.

2. COPYRIGHT

- ▶ Exclusive right granted *by statute* to the author of the works to reproduce dramatic, artistic or literary creations OR to authorise its reproduction by others.
- ▶ Persists for a limited period after the author's death after which it can be sold OR inherited.
- ▶ It protects the expression of the idea rather than the idea itself.
- ▶ Also extends to movies, TV shows, and even application programs/software.
- ▶ Obey international norms like Berne Convention, Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement, World Copyright Treaty (WCT) of World Intellectual Property Organisation (WIPO).
- ▶ Indicated internationally using ©

3. TRADEMARKS

- ▶ Symbol, logo or name - unique to a manufacturer/supplier/importer of goods.
- ▶ Easy identification by public.
- ▶ Can be registered to get exclusive right to use.

4. TRADE SECRETS

- Similar to patent but depend on private measures rather than governmental action to maintain exclusivity.

IT and IPR

IPR in IT....why? Because IT is....

1. Rapidly changing.
 2. With shorter product life cycle.
 3. With high investment in R & D, production and marketing.
 4. A multidisciplinary area requiring high level of skill.
 5. Not influenced by geographical boundaries.
 6. A great equalizer for human society.
 7. Highly software driven.
 8. A very competitive industry.
- ▶ Electronics - the second largest after chemicals in which a large number of patent applications are being filed in India.
 - ▶ Other than the existing rights (as in other fields) additional rights are not being added under ICT sector.
 - ▶ Similar to other areas patent is the strictest IPR under ICT.

Types of IPR applicable to INTERNET

- ▶ General public are not interested in IPR related to internet and they are vigilant only on usage charges and issues related to online transactions and businesses.
- ▶ Copyrights are limited to online documents and software.
- ▶ Trademarks and patents for registered designs, IC lay outs and hardware products.

COPYRIGHT

- ▶ Once a material is published anywhere in member countries of the Berne Convention, it becomes copyrighted material and no separate registration is required. This means.....
- ▶ any information which is transmitted on the internet is a subject matter of copyright.
- ▶ Already copyrighted material may be transmitted on the internet.
- ▶ Many groups of people are involved like ISP, the user (downloader), content provider etc.
- ▶ Hence, violation of right may come at any level.

COPYRIGHT.....

- ▶ Issue becomes complicated when a collection of copyrighted material is transacted through internet.
- ▶ Who would be responsible for illegal use of information? - no definite answer.
- ▶ Procedures should be there to ensure that internet does not encourage unlawful use of any copyrighted matter.
- ▶ Berne convention member countries - provide legal protection and action against copyright infringements. Vigilant about authorised and illegal use of CR material on the Internet.
- ▶ Decryption methods/devices not allowed without the consent of authors.
- ▶ Such decryption systems have to be purchased as per the recommendation of the authors or their assignees.
- ▶ Artists, writers, composers etc. and those from entertainment industry are already aware of these.

TRADEMARKS Vs DOMAIN NAMES

- ✂ A domain name is the home page address of a web site/email address equivalent to the IP address i.e the identity of the site. (appears after 'www' in address bar).
- ✂ Internet- an effective medium for international trade and business having no geographic boundaries for markets.
- ✂ Trademarks are necessary on 'www' because.....
- ✂ Goods and services not available for physical verification as in real stores and domain name is the alternative (for viewing images, features or customer reviews).
- ✂ Customers get confused if same domain names and/or trademarks are allotted to firms doing similar businesses.
- ✂ Many developing countries - not members of trademark related treaties. But international nature of internet lead to legal cases as many are unaware of trademarks/names registered elsewhere.
- ✂ So, global search needed before allotting domain names to avoid legal issues.

PATENTS & OTHER RIGHTS AND INTERNET

- ▶ Patents have a secondary place in the area of Internet.
- ▶ As internet is transcontinental, better encryption and decryption technologies are to be followed to avoid infringement.
- ▶ For E-commerce parties special keys (codes) like digital signatures are introduced and maintained to prevent unlawful access.

NOTE: A digital signature is a mathematical scheme for demonstrating the authenticity of digital messages or documents. A valid digital signature gives a recipient reason to believe that the message was created by a known sender, that the sender cannot deny having sent the message (non-repudiation), and that the message was not altered in transit (integrity).

- ▶ But sale of unauthorised decryption methods/devices is a problem. So ISP's would monopolise decryption services along with many other facilities which the users themselves can arrange.
- ▶ In India software are not patentable^{*see footnotes} and considered as literary works. In many other countries software are patentable. Patent is suggested to get stronger legal protection. Software development needs much human effort and high investment. Proper software help better functioning of machines and ones copied to storage devices they become tangible products.

PLAGIARISM

- ✗ “Deliberate or reckless representation of another’s words, thoughts or ideas as one’s own without attribution in connection with submission of academic work, whether graded or otherwise”.
- ✗ Unauthorized use or close imitation of the language and thoughts of another author and representation of them as one’s own original work.
- ✗ Use of images, texts, etc. of any kind we use in education should be properly acknowledged. Use of others’ ideas/words without acknowledgement becomes plagiarism.
- ✗ All knowledge is built from previous knowledge. Give proper references (citations) for all information (other than common knowledge) wherever required.

PLAGIARISM Vs WWW

- ▶ WWW - a vast source of information for students.
- ▶ How to avoid plagiarizing these resources?.....
- ▶give citations (site name/URL).
- ▶ This applies to all text, graphics, graphs, multimedia files etc.
- ▶ Give references (URL) in written assignments, projects, presentations etc.
- ▶ Permission has to be obtained from authors in case of using copyright materials on the net.

USE OF ICT IN EDUCATION

- ▶ Education -most influencing system for national development.
- ▶ Change in tune with times.
- ▶ Global standards and methods at school level and higher education.
- ▶ Integrating ICT in teaching/learning and research - a challenge.
- ▶ Shift from chalk & talk classroom study.
- ▶ Pedagogical methods to be combined with technol.edu.tools. to enable participative learning (discussions/dialogues etc.)
- ▶ Methods vary according to subject content, available multimedia technology, lecture duration, students' knowledge level, student control level, student behaviour, interaction history of student/teacher etc.
- ▶ Advancements in computer & communication technol.have created new systems of T & L.
- ▶ Skill improvement through virtual lab for example.

USE OF ICT IN EDUCATION.....

- ▶ ICT is an interdisciplinary area - mathematics, electronics, logistics, psychology, management, linguistics, etc.
- ▶ ICT implies a combination of computers, networks, satellites, telephones, TV, radio etc.
- ▶ IT resources include hardware, software, people, education, government and other collaborative entities.
- ▶ ICT application in education involves disciplines related to computer handling, processing, management, automation, and communication of information in the broader cultural and economic context of a society.

USE OF ICT IN EDUCATION - MODES

- ▶ **1. Audio - Visual (AV) communication** - Alternative instructional delivery systems such as radio, TV etc.
- ▶ **2. Vocational training tools** - Computer based training (CBT), Computer Aided Design (CAD) etc.
- ▶ **3. Computer based systems/Education(CBE)**- computers and computer-based systems for instructional delivery and management. Interactive instructional strategies that use computers to convey and teach instructional material to students, as well as monitor their learning. Computer generated feedbacks. Computer Assisted Instruction (CAI) is a part of computer based systems/education (CBE)
- ▶ CBT programs are called "courseware".
- ▶ **4. Internet/web based education** - Edu.info. in various formats and courses offered by various web sites.

USE OF ICT IN EDUCATION - The Smart Educational Institutions

- ▶ Senses and thoughts are integrated with feelings and actions with the use of ICT - 'smart institution' and 'digital (virtual) classrooms'.
- ▶ Adoption of ICT methods change the modes, styles, techniques and tools of teaching and learning.
- ▶ ICT based learning experience help students to change their perception.
- ▶ Flow of information supports new ways of thinking and transforming thoughts into actions.

'smart institution' and 'digital (virtual) classrooms' helps in.....

1. Shifting of teaching to student -centred and collaborative style.
2. Preparing students who are creative, numerate, literate, well-trained and readily retainable at any point in their development.
3. Ensuring that all students understand the necessity of being able to live and work harmoniously with other people in their environment and progress of the society.

Experiential Learning (David Kolb) - Watching&thinking (mind), Feeling (emotions), Doing (muscles) is realised through ICT based education.

USE OF ICT IN EDUCATION - Virtual Classrooms

- ▶ Learning environment created in virtual space with increased level of student - teacher interaction.
- ▶ A collaborative learning process involving learning communities using computers and communication technologies.
- ▶ Improve access to advanced educational experiences through remote learning.
- ▶ Practical classes are being replaced by sophisticated software systems that teaches virtual lab atmosphere.
- ▶ Teaching, learning, examination, evaluation, declaration of results, feed backs.....all steps are completed online.

APPLICATION OF ICT IN EDUCATION - 1. MULTIMEDIA

- ▶ Lecture content is integrated with interactive multimedia.
- ▶ Helps students to understand concepts in action through the effective combination of the lesson, activity and visual representation, leading to deeper understanding.
- ▶ Animations, interactive simulations, virtual reality, and web serving.
- ▶ Effective blending of audiovisuals, graphs, graphics, and images made available via a projector.
- ▶ Preferred mode of communication can be provided to all students.
- ▶ Animations/videos are effective tools for understanding processes/reactions.

APPLICATION OF ICT IN EDUCATION - 2. COMMUNITY RESOURCES

- ▶ Digital community allows students to engage in dialogues with each other, their teacher, and experts in any part of the world.
- ▶ Asynchronous and synchronous communications - delayed format (eg. E-mail, feed backs) and instant format (chat rooms, MOOs etc) respectively.
- ▶ A MOO is a special chat room with unique interconnections and architecture. Originally used for role plays online, is now available as a chat forum of academicians and students and also for the conduct of online lectures and demonstrations.
- ▶ NCTE (National Council for Technology enabled Education) of GoI has taken the form of NPTEL for conducting Massive Open Online Courses (MOOCs)
- ▶ National Portal for Technology Enabled Learning (NPTEL) offer online courses in varied disciplines in India.

APPLICATION OF ICT IN EDUCATION - 3. INDIVIDUALISED INSTRUCTION

- ▶ Bridge the gap between teaching styles and learning styles.
- ▶ Suitable for learners, auditory learners, and kinesthetic learners.
- ▶ In manual teaching, it is difficult follow methods suitable for all types of learners.
- ▶ Programmed instruction models can be used to provide feed back to each student.

APPLICATION OF ICT IN EDUCATION - 4. AUDIO VISUALS & ANIMATION

- ▶ Audiovisuals, video conferencing, short animations, virtual reality etc. can be used in teaching learning process.
- ▶ Slides, short films, transparencies, demonstrations, video/audio presentations, CD-ROM etc. as teaching tools.
- ▶ Ideas can be easily linked for better understanding with minimum effort and time.
- ▶ 'Gyan Darshan' launched in 2000 by Prasar Bharthi (channel 413), Central Institute of Educational Technol. of NCERT provides edu. Videos and audios.

APPLICATION OF ICT IN EDUCATION - 5. DIGITAL DEVICES

- ▶ **Digital cameras, scanners etc used indirectly for instruction.**
- ▶ **Digital photos/recordings used for virtual field trips, experiments and demos.**
- ▶ **Portable (hand-held) scanners for scanning and documentation of learning materials.**
- ▶ **Digital blackboards, electronic pens and touch screens for enhanced teaching and learning.**

APPLICATION OF ICT IN EDUCATION - 6. LCD PRESENTATION

- ▶ Projection of texts, slides, animations, videos, images etc. for a group of students.
- ▶ Interactive 3D colour images and animations can be projected using special software like AutoCAD and Lab View.

APPLICATION OF ICT IN EDUCATION - 7. PDA and OTHER PORTABLES

- ▶ PDAs , and other portable devices as e-learning (electronic learning) tools helping in anytime anywhere learning experience.
- ▶ Shift from e-learning to M-learning (mobile learning using hand held smart phones) using all potentials of mobile computing (including Bluetooth, WiFi, IR communication etc.)

APPLICATION OF ICT IN EDUCATION - 8. ONLINE MATERIALS

- ▶ **Databases** made available by Governmental agencies, libraries, research organisation etc. Can be accessed for extracting information.
- ▶ **E-journals** for obtaining current research information helping in preparing good assignments and research papers.
- ▶ **Software libraries and digital libraries** : contain programs that the learners may download to their own computers. The installation allow running/downloading of e-books, CDs, and teaching tools.
- ▶ Some special viewers or plug-ins have to be installed for viewing certain web sites.
- ▶ Teacher gives a problem- students construct idea diagrams & idea webs using hypertext and multimedia for linking these ideas. This interlinking is choice based (as per student convenience) which finally gives the teacher an idea about the students level of understanding.

APPLICATION OF ICT IN EDUCATION - 9. INTERACTION PATTERNS

Teacher-Parent:

- ▶ better opportunities for online conversation on pedagogical problems, hostel issues,
- ▶ Voice mail, SMS, e-mail, etc.
- ▶ Even parents can login to virtual classrooms if necessary.

Teacher-Teacher:

- ▶ Teachers all over the world can share their instructional activities and experiences with each other.
- ▶ Teachers chat rooms are available for such real time/delayed discussions.

Teacher – Student & Student-Student:

- ▶ For a better creative learning environment.
- ▶ Weekends/holidays can be utilized for online discussion at a specified time.

APPLICATION OF ICT IN EDUCATION - 10. ONLINE TESTING

- ▶ Question banks can be uploaded by teachers.
- ▶ Objective type tests can be placed online for answering by students.
- ▶ Test will be available for a specified duration only after which it closes automatically.
- ▶ Students can submit answers.
- ▶ Results (scores) with proper feed back will be available online.
- ▶ Other methods of evaluation like attendance, online quiz, assignments, presentations, documents, audio-visuals can also be done through such platforms.
- ▶ Example: MOODLE (LMS for conducting courses, uploading study materials, giving instructions, tests, evaluations and feed backs).

APPLICATION OF ICT IN EDUCATION - 11. WEBSITES

- ▶ A college/classroom website is an innovative way of creating learning environment and involving the education community in the same.
- ▶ The home page of the website is linked with student page, parent page, teacher page, philosophy and academic pages

FACTORS AFFECTING THE USE OF ICT IN EDUCATION -

Leadership qualities and attitudinal changes:-

- ▶ Principal and teachers with a vision about the potential of ICT in education.
- ▶ Readiness to bring the change with interaction with others to realise the vision.

Time consuming:-

- ▶ Integrating ICT with T & L process is difficult and time consuming in its initial stages.
- ▶ Delay in purchasing and installation of proper devices, software and setting of networks
- ▶ Substantial level of support and encouragement is required for teachers to adopt technology.
- ▶ Faster and better performance is possible after the attainment of proficiency.

Infrastructure insufficiency:-

- ▶ Many of the educational institutions in India are not ready for adopting technology in education due to lack/deficiency of physical and IT infrastructure.
- ▶ Attitudinal changes in Government and policy makers is required.

EDUCATIONAL SOFTWARE

- ▶ A software for teaching and/or self learning or e learning.
- ▶ *E Learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.*
- ▶ Developed for all types of subjects.
- ▶ They run primarily on very remote servers.
- ▶ The user only gets small segments of learning/test modules uploaded on the net.
- ▶ The server software decides on what learning material to provide, collects results and displays progress to teachers.
- ▶ Many courses are conducted over the internet directly by individual websites.
- ▶ But many online courses are conducted and managed through software such as Blackboard Learn, MOODLE (modular object-oriented dynamic learning environment) and WebCT (www Course Tool- originally owned by Uty. Of British Colombia, and now owned by Blackboard Inc. A proprietary virtual learning system) .
- ▶ Edu.software provide all conveniences of classroom study like idea exchange with teachers, through chat forums, email etc. Teachers post syllabi, notes, exams, queries, etc and students can ask doubts, write exams, submit assignments and get feedbacks.

OBJECTIVES OF EDU.SOFTWARE