Research Paper

Current Trends &Various Effective Uses of ICT in Education for Quality Research and Learning

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Abstract
ICT—information and communication technologies—are used to create, distribute, store, and manage information. This paper examines computer use in teaching learning circumstances, critically analyses existing ICT in education research, and highlights current research trends. Computer-assisted training uses drill and practise, simulation, games, and tutorials to teach. This study outlines computer integration into instructions and discussed about web-based instruction methods. It also shows how ICT improves assessment and education. ICTs are used in all data gathering, processing, and knowledge generation processes, including teaching and learning. Learning Management Systems (LMS) like Moodle help ICTs in education, especially in instruction. If fully utilised, these systems have tremendous capabilities. Learning systems allow engagement, feedback, conversation, and networking. They also allow for new teaching and learning approaches. Several studies say Moodle (Modular Object-Oriented Dynamic Learning Environment) is the most popular and easiest platform in higher education. Moodle (modular object-oriented dynamic learning environment) is a free online learning platform that allows educators to create interactive, collaborative courses. It gives the "teacher" several chances to become a facilitator and role model in learning.
Keywords:*Computer Assisted Instruction (CAI), LMS, MOODLE, etc.*

I.   Introduction

Information Communication Technology has transformed most business activities during the past 25 years. The world is rapidly shifting into digital media, therefore ICT in education is increasingly crucial and will continue to improve in the 21st century to make education more flexible so that anybody can learn anytime, anywhere. ICT are a powerful instrument for delivering learning opportunities and a value-added tool for teaching/learning in numerous ways: to inspire and engage learners, to help them learn basic skills, to improve teacher/student training, and to transform learning. It can help move from teacher-centered to learner-centered. Education develops the whole person—cognitive, conative, social, and economic—and meets individual requirements.

Instructors employ charts, objects, demos, models, PPT presentations, OHPs, etc. to improve quality. They should be trained in their use and preparation. Most schools don't have content-related teaching aids or A-V equipment.

II.   Literature Review

Zhao and Cziko (2001) require three requirements for educators to integrate ICT into their classroomTeachers should trust in technology's efficacy, its stability, and their control over it.Smeets, (2005) Study shows that most teachers do not use ICT to improve learning settings, even though they appreciate it. Harris (2002) stated that self-confident teachers ready to explore new ways to use ICT to improve classroom performance will benefit from ICT. According to Littlejohn et al. (2002), instructors will have new accountabilities and skills for high-level ICT and facilitative rather than informational instruction.Kozma (2008) found that governments are using several methods to integrate ICT into education. Moonen (2008) found that ICT's potential in education is unclear. According to McDougall (2008), teachers often lack ICT training, and hence teacher education and preparation are neglected. According to Sullivan (2010), IT enhances learning and prepares the next generation for survival and livelihood.

Information and Communication Technology (ICT)

Information and Communication Technologies (ICT) are used to distribute, collect, and manage data. Blurton (1999) defined ICT as a "Diverse set of Technical tools and resources used to communicate, and to create, transmit, store and manage information."

Modern digital ICT includes hardware, software, multimedia, and delivery systems. Present scenario: laptops, PCs, digital cameras, DVDs, word processors, spreadsheets, Power Point, Internet, email, digital libraries, World Wide Web, videoconferencing, Webinar, YouTube, Blogs, etc. Informing that ICT is being integrated with earlier technologies allows existing resources and services to be used continuously is mandatory. Technology helps teachers enhance education and learning.ICT alters numerous life stages. E-learning, virtual universities, e-coaching, e-education, e-journals, and e-books are now possible.

Teacher education now requires Technology. It aids learning and can improve teacher education systems. New communications technology will minimise isolation and provide unprecedented access to knowledge. ICT enriches digital classrooms and libraries for teachers and students. It also lets teachers use all their senses to learn. It also enlivened the classroom.

Current Research Trends on How to Use ICT in Education
Following are the ways in which computers is used in the fieldof education:
- **Computer Based Education (CBE):•** It covers all computer usage in academic contexts. This could involve creating databases, writing with word processors, using tutorials, programming, and managing educational materials.
- **Computer Assisted Instruction (CAI):**It is a method of computer-assisted instruction for education. CAI programmes present a topic via tutorials, drills, and question-and-answer sessions. These initiatives additionally assess pupils' comprehension. As a result, the computer takes on a direct educational role that involves online communication between the computerised delivery system and the student.
- **Computer Managed Instruction (CMI):**It manages information about learners' performances using a computer system. CMI programmes are made to give out diagnostic exams, grade them, and provide remedies. Also, these tools track the pupils' development and accomplishments. The use of computers to arrange student data and direct them through personalised learning experiences is also included.
- **Computers Assisted Learning (CAL):**It is a potent technique for reiterating ideas and subjects that were initially given to pupils through textbooks and classroom discussion. CAL packages support independent learning for pupils. These materials include multimedia components like graphics, music, and video clips to keep students' attention.
- **Computer Based Testing (CBT):**E-examination or computerised testing are other names for it. It is a technique for giving exams where the answers are electronically recorded and graded. It gives teachers the ability to create, deliver, and score tests, examinations, and quizzes using computers. Multiple choice questions are particularly well suited to computer-based testing. The computer is capable of automatically scoring these questions. Anywhere, at any time, a student can take a test and receive immediate feedback.

Teaching Learning Using Computers
In computer assisted instruction, the computer acts as a teacher and deliversinstruction through various modes:-
- **Drill and Practice**-The learner completes a set of exercises presented by a computer. The machine then provides commentary on the response. If the feedback is positive, it will either be a message of congratulations or a correction. The learner might receive unending drill and practise on a computer until proficiency is attained.
- **Tutorial Mode**- An introduction to a tutorial gives the students information about the goal and structure of the course. Following a brief presentation of material, a question is asked. The computer analyses the pupils' responses, and the right feedback is then supplied.
- **Simulation Mode-**Simulating something in order to teach about it is a teaching method. Students engage with the programme in a way that mirrors how they would respond in actual life. To analyse occurrences that are too fast or too slow, the computer can compress or stretch time.

- **Gaming Mode**: A simulation is very similar to an educational game. But a game doesn't have to be an exact replica of reality; it can also present fun challenges. It gives a detailed description of the game's rules and how they will be applied. Participants compete against one other, themselves, or a predetermined goal.

Some Steps to Integrate Computers into the Instructional Process
These steps have been given by experts and provide useful suggestions to teachers for integrating computers into the instructional process.
1. Evaluate the students to ascertain their entry-level abilities and skills. By evaluating their knowledge and skills, this can be accomplished. Also determine what they need to learn.

2. Describe the goals: The instructor should describe what the pupils should be able to perform after using the software.

3. Choose media and resources: - Choose the best teaching style. Materials should be chosen to fit the goals and requirements of the pupils.

4. Make use of the resources: Students can use computers to work alone or in small groups. Using an overhead projector, the teacher may show a computer presentation to the entire class. The amount of computers available, the material to be covered, the teacher's expertise, and a number of other criteria will all influence the manner of instruction.

5. Computer-based learning - Let pupils use the computer. Keep an eye on the students' progress.

6. Assess and revise: Go over the computer-generated reports about the students' performance and test results. Further review and practise may be given if pupils haven't fully understood the subject.

Internet Based Learning
It involves using web-enabled technology for teaching and learning. It includes using online publications, educational portals, links, and other academic materials as well as other online educational resources for the goal of instruction and learning. It also includes online communication including chat, phone calls, video conferences, and e-mail.

Two approaches can be used to implement web-based instruction, according to Mohan Sundaram and Kumaran (2000):

(a) Web-assisted classroom instruction - In this approach, the instructor will find the appropriate website, gather facts and images about the subject, and present them in class. With the aid of 3-D images, animation, and multimedia, abstract concepts can be easily explained. As a result, the website serves as a teaching tool used by the instructor to enhance learning.
(b) Individual learning: The learner will make contact with the website, gather data, and absorb the lesson. The topic is learned by each learner at their own rate. Interaction with the teacher of the class may come next. The students can then participate in follow-up activities created by the teacher.

Almost eighty hundred courses from five hundred thirty schools across twelve nations have already been listed as part of a Canadian attempt to index online courses from around the world into a single web-based source. There are becoming more virtual institutions offering certifications, diplomas, and degrees. India has also stepped into the field of online learning. IGNOU's Virtual Campus, APTECH's Online Varsity, Tamil Virtual University, and Intel's Teach to the Future are a few recent initiatives. Global University Alliance is a project that involves nine universities working together across four continents. This partnership will provide graduate and professional online education in Asia. A student may submit an application for admission to any of the alliance's universities. Nonetheless, there will be freedom to enrol in classes at any college that is a participant and receive academic credit at the home university.

- **ICT for Curriculum Transaction: Effective Usage**

The curriculum includes the theoretical components of learning in the form of a syllabus, the practical components in the form of a process understanding, and the anticipated results in the form of learning outcomes or products. ICT integration into curriculum transactions refers to using ICT to teach academic disciplines. This comprises:

Curriculum integration in the classroom, teacher training on efficient ICT use, encouragement of creativity, collaboration, communication, and cultural variety for learners' personal growth, assessment of student learning, and a rise in learner engagement are all important components.

- **ICT for Evaluation and Assessment**

In order to recognise student accomplishments and enhance teaching and learning, assessment refers to the technique of gathering student learning evidence. It serves many purposes and various audiences and is a crucial and essential component of classroom learning. Most significantly, it identifies students' learning strengths and weaknesses and gives feedback on the quality of instruction to students, teachers, schools, and parents. Additionally, it gives businesses, educational boards, government, schools, and school systems vital information for planning and decision-making.

ICT capability is reliably and consistently assessed and recorded. They are informed by the application of ICT in other subject areas and by classroom management. Reporting to parents is done in accordance with the law. Students constantly evaluate their own and other students' ICT skills using standards they have set. This aids in their improvement and helps them better appreciate what good quality is.

- **Learning Management System for Education: Moodle**

A learning management system, or LMS for short, is a piece of software used to administer, record, track, and report on in-person and online events, e-learning courses, and training materials. School districts and schools utilise LMSs to deliver online courses and supplement on-campus courses. LMSs range from systems for managing training and educational records to software for distributing online or blended/hybrid college courses over the Internet with features for online collaboration.

LMSs don't merely replace teachings that are taught in a physical classroom; they also serve to supplement them. Corporate training departments utilise LMSs to automate record-keeping and employee registration, as well as to conduct online training. This infographic charts the incredible history of learning management systems since it started in 1906, when University of Wisconsin was established as the first distance learning institution. It includes the extremely basic "problem cylinder," "KHUT," and "SAKI" as well as Microsoft's Sharepoint Learning Kit and the incredibly straightforward ProProfs LMS. The learning management system has evolved significantly since its inception in the 1950s to become a crucial component of modern educational strategy. The use of learning management systems (LMS) to administer, document, report, deliver, and track online training programmes and education courses has grown in popularity in recent years.

What LMS can do?
- Offers a variety of modules;
- Enables students to interact and work together

Every facet of a student's academic life is displayed, and grades and rapid feedback are provided. Parents can watch their child's development.The capacity to quickly compile content, use self-service and self-guided approaches, support portability and standards, and enable content personalisation are all traits of learning management systems.

Often used learning management system

All of these elements are combined by Blackboard's learning management system (LMS) solutions, which allow you to provide an affordable and worthwhile learning experience for all users at all levels. We can put your classroom online using Blackboard (LMS). With tools for collaboration, engagement, grading, tracking assignments, and more, you can successfully engage students and make sure they are engaging with the curriculum and content in the best possible ways. There are fundamental elements of e-learning that enhance learning regardless of the setting.

Haiku: The safe Haiku LMS is a learning management system that places a strong emphasis on community, innovation, and content. For each of their courses, teachers can establish a Haiku website where they can post information including assignments, tests, grades, and multimedia resources. This data, along with many other interactive features, will be available to students and their parents.

MOODLE.

The abbreviation for Modular Object-Oriented Dynamic Learning Environment is MOODLE.It's a learning management system available online (LMS)Moodle is a free open-source learning management system, commonly referred to as a virtual learning environment or Learning Management System (LMS) (VLE). The modular structure of Moodle makes it simple to build new courses and include engaging content. It is a free web tool that teachers can use to design successful online learning environments. Its open source, which allows any

user with programming knowledge to change and adjust the environment to their own needs, is one of its key features. Martin Dougiamas developed Moodle in 2002. The first "M" of the Moodle abbreviation was originally Dougiamas's first name, Martin. Moodle was created by Dougiamas to support teachers in the creation of interactive, collaborative online courses.

Uses for Moodle
 • Moodle can be created for big businesses, elementary schools, or education enthusiasts.
• Moodle is used for fully online courses or to supplement in-person instruction (hybrid or blended learning);
 • Moodle includes activity modules like forums, databases, and wikis to foster vibrant community collaboration;
 • Moodle provides instruction to students and evaluates their understanding via online quizzes and tests.

General Features of the Moodle Platform

Role	Function
Administrator	Manages the whole environment
Teacher	Generate events, courses or subjects according to the thematic areas defined Generate training or events which are designated
Student	Accesses and interacts with a specific event and participates in the subjects they are subscribed

MOODLE the world's best LMS with its advantages:
The top three advantages make Moodle the best LMS in the world.
1. **It is Free and Open Source**

2. Backing from a Global Community
3. Feature-Rich, Configurable, and Extremely Flexible

1. Open Source and Free: Since Moodle LMS is open source software published under the GNU General Public License, it is free in its entirety. This simply means that users and organisations are free to use, examine, distribute, and adapt the programme to suit their particular requirements. While some Moodle site owners decide to handle all aspects of Moodle support themselves, others choose to outsource particular jobs to Moodle Service Providers since it is more affordable.

2. Backed by a Worldwide Community: Moodle's support from a large developer community around the world is one of the factors that make it the greatest LMS in the world. The fact that the code can be examined is a significant advantage of open-source software. As a result, programmers from all around the world have access to the code and can alter it to make it more secure. Also, it indicates that actual Moodle users are reviewing the code. The advantage of this is that Moodle is frequently updated by individuals who are aware of what users require for an improved user experience.

3. Configurable, Highly-Flexible, and Feature-Rich: Configurability, Highly-Flexibility, and Feature-Richness make Moodle a top choice among businesses. In addition to having access to Moodle's open source code and the thousands of Moodle Plugins available, you may customise Moodle to work exactly how you want it to. Your students, managers, and administrators have the chance to thrive in a setting that fosters collaboration, engagement, and fun learning thanks to the more than 500 Moodle plugins created by the global community.

MOODLE in Training and Education
Moodle was first created for higher education environments (universities), but it has quickly spread to a wide range of organisations around the world to support face-to-face teaching and learning or run entirely online courses. Its modularity, flexibility, security, and accessibility for free have drawn learning communities from small primary school classes to sizable colleges, corporations, government agencies, and other learning environments.

Using Moodle in the Classroom: Flexible Learning
Face-to-face video conferencing and constant access to courses and content are all made possible by Moodle's eLearning platform. The ability to access materials from anywhere with Internet access gives students the flexibility to learn at their own pace. Due to the flexibility of online learning, students are better able to balance their time between employment and education.Blended learning combines in-person instruction with online study for a stimulating learning environment that keeps students interested in all available learning

opportunities. Moodle is multilingual and inclusive of students from all around the world because it can be translated into more than 100 languages. This enables high-quality current learning.

Accessibility on Mobile
Mobile eLearning is available on Moodle, making learning while on the go simpler. With better access to course materials on any mobile device, mobile eLearning is seen as a supplementary part of the learning process.

Engaging Students
keeping students engaged and enthusiastic through a variety of teaching techniques and a personalised learning environment made possible by the 250+ Moodle plugins that are readily available.

Moodle's Benefits for Teachers
1. Provide educational materials for students 2. Add pertinent web links to subjects
3. Start discussions on marriage on a forum; 4. Gather assignments; and 5. Administer electronic tests
6. Design online classes
7.Upload forums
8. Design online quizzes and tests
9. Separate lesson files and student files Access courses
10. Conversations

III.   Conclusion

The current imperative is to develop a high degree of competency in ICT use. The current demonetization movement in India makes us consider the vast potential of information technology, which has the potential to significantly improve our quality of life. The stark discrepancies in CCE scores across schools that have implemented ICT-enhanced teaching and learning environments show that the time has come to advance to the next stage, where education is no longer restricted to the classroom's four walls or to a small number of books. Let's introduce information and communication technology to our pupils so they can benefit from the huge universe of knowledge, enhance their natural abilities, and unleash their untapped potential.

Moodle is one of the most user-friendly and reasonably priced creative approaches since, when utilised properly, it may motivate and pique students' interest in participating fully in their educational experience. Students now have the chance to actively engage in the course outside of scheduled class times and physical classrooms thanks to Moodle. The struggle among students to "succeed as an individual," which frequently takes shape, is positively moderated by Moodle, which instead promotes collaborative learning through its ability to enable group learning. In every university learning environment, Moodle's capabilities, such as expanding course accessibility, allowing shared production, collaboration, and knowledge mastery, are crucial. Higher student achievement, self-reliance, a collaborative culture, and abilities for lifetime learning are all supported by the cooperative learning that develops through the interactive nature of online tools like Moodle.

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