

A COMPARATIVE STUDY OF COMPUTER-AIDED(ICT-BASED) TEACHING/LEARNING VERSUS TRADITIONAL TEACHING/LEARNING METHODS: IMPLICATIONS FOR EDUCATIONAL PRACTICES

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ABSTRACT

This paper's main thesis is that information technology is being used in education more and more, which has an impact on how science and society are taught as well. This indicates that the process of education is ever-evolving and bettering, but educational tools are likewise getting more current. Modern didactic and methodical knowledge is progressively highlighting the limitations of conventional education and providing ways to overcome these and other shortcomings, including via the use of contemporary information technology. Students can employ multimedia teaching resources, topics, and educational computer applications to autonomously and critically use knowledge sources. Teachers will benefit from the global need to replace conventional teaching techniques with technology-based teaching and learning tools and facilities through the integration of information, communication, and technology (ICT). Future research must take into account other facets of ICT integration, particularly from a management perspective with relation to policy formation and strategic planning.

Keywords: Education, Educational Software, ICT, Multimedia Teaching, Teaching Methodology.

Introduction

The word "technology" has significant implications in numerous domains, including education, in the twenty-first century. This is a result of the fact that most nations today employ technology as a means of information transfer. These days, technological integration has undergone breakthroughs and revolutionized our society, completely altering the way people live, work, and think.

The use of computer-based communication that is integrated into the regular teaching process in the classroom is known as information, communication, and technology (ICT) integration in education. In addition to getting pupils ready for the modern digital world, educators are viewed as the main agents of ICT use in the classroom. This is because ICT can provide an active and dynamic environment for teaching and learning.

In a world where information technology impacts all societal sectors and where education, employment, and leisure are circumstances are being established for the establishment of the so-called informatics society, which has the potential to develop into a knowledge society, under a new, virtual environment. This indicates that in addition to creating and advancing the teaching process, instructional materials as well as the technological tools and equipment that teachers and students utilize were also updated. We are seeing a sudden and quick advancement in science and technology, with clear implications for education and teaching as well as new opportunities this revolution has brought about.

ICT may be applied in a variety of ways to support instructors' and students' learning about their subject areas. Technology-based teaching and learning offers a variety of engaging methods that will enhance the learning process, such as educational videos, stimulation, data storage, database use, mind mapping, guided discovery, brainstorming, music, and the World Wide Web (www) (Finger & Trinidad,

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2002). Conversely, students will gain from ICT integration when they are not constrained by a restricted curriculum and resources; rather, they will engage in hands-on activities in a technology-based course that aim to stimulate their comprehension of the subject matter. Additionally, it supports educators in creating engaging, innovative, and successful lesson plans that encourage students to actively learn. Research from the past has demonstrated that integrating ICT into the classroom improves student learning and makes the most of their capacity for active learning.

Students today encounter a wide range of multimedia information at every turn. Their attention is divided among several pieces of material because they are overloaded with information of all kinds. It is vital to adapt and innovate instruction in such a setting in order to make it more palatable, engaging, and beneficial for the pupils. All of this indicates that schools are losing their position as the primary source of knowledge and fresh information due to the pressure of computerization, therefore we need to be conscious of this reality at this time. Due to these factors, we must modernize education as quickly as possible by utilizing the forms, procedures, and tools that are now in use. Therefore making education more effective, imaginative, and logical

Computer Applications for Education as well as Society

- **Modern Teaching Functions using Computer Software Models**

Different types of software are employed under the umbrella of educational computer software in elementary school and higher education nowadays while discussing new teaching methods. This software includes programming languages as well as a particular pedagogical and logical framework for organizing instruction. The circumstances are set up for the infinite growth of computer modeling and simulation, taking into account the enormous potential of computers and digital technology. Aiming to increase students' technical literacy while also introducing them to computer technologies and their potential applications, software models are used in the classroom. The intellectual technology known as **educational computer software (ECS)** consists of pre-made computer programs that may be incorporated into lesson plans and aid in and direct each student's specific learning process.

- **Educational Software that Successfully Teaches about Society and the Natural World**

With the use of electronic information sources, educational computer software presents a summary of the documents based on each student's unique skills, interests, and history. It minimizes teaching class flaws when combined with other work techniques.

The program content of the World around us: Nature and society course is quite complex, therefore it makes sense that several approaches to presenting and preparing students for the processing of new information are required. These approaches should come from different teaching strands. To improve the outcome in this respect, the use of computers in teaching Nature and Society should be included gradually and methodically. The most popular subjects might be covered in the home environment by teachers watching a variety of films, animations, drawing diagram and so on.

Given the relative simplicity of creating presentations and managing educational computer applications, teachers with very little computer experience may create comparable (semi-programmed) materials. Creation entails creating assignments that are appropriate for each precise answer and dividing the contents of the chosen teaching unit into smaller, logical pieces grouped by weight. Depending on the information being processed, students' knowledge, interests, and skills, and the educational software, the content presentation can only occur partially—either at the beginning, in the middle, or at the conclusion.

There are more and more free online resources available to help with organizing and preparing lesson plans. Additionally, there are more accessible e-learning models that may be utilized in classrooms. These models include interactive software, well-prepared texts, images, videos, audio recordings, presentations, electronic evaluation, games, and quizzes. These educational tools are recharging, enhancing, completing, and aligning with the demands of learning. Themes may be used to link and contrast the information from many sources, which will help students develop their capacity for exploration, critical thinking, and synthesis analysis. Teachers and students would have access to a wide variety of electronic educational resources and materials in this fashion.

- **Teachers' and Students' Roles have Changed in the Modern Computer Classroom**

Traditional teaching in education history was centered around the teacher's lecture for a considerable amount of time. It was the focal point of the educational process, the only source of information it could impart, and the determinant of how well students learned.

The modern conception of education and learning, on the other hand, is predicated on brand-new circumstances and information technologies that concentrate the learning process around the unique needs and opportunities of each student. However, because it alters in the new multimedia learning environment, the function of educators in the new situation is crucial. Through this approach, the educator transforms into an organizer who plans, launches, and guides his students' autonomous exploration of the educational software.

Given the nature of teaching and the high level of accountability, all educators need to be taught in innovation and the application of creative work models in the classroom teaching of certain subjects. This implies that they must possess highly specialized theoretical knowledge as well as real-world programming abilities, as well as an introduction to teaching methodology and the ability to monitor and assess creative work models. This skill entails both a highly precise, systematic knowledge as well as knowledge of content, that is, information from the field of expertise in which innovation is carried out utilizing an innovative model of work.

Given that the teacher serves as the manager of the learning process and that computers are currently considered "perfect" teaching tools, combining the advantages of modern technology with the advantages of the teacher as an individual can lead to better outcomes in the teaching of society and nature.

Information and computer technology, in the context of modern educational technology, empowers students to take charge, choose the content they engage with in a multimedia environment, and assess their own learning and performance. Furthermore, learning may continue whenever and wherever computers are available. A further benefit of modern computers is the ability to employ many information sources simultaneously, which undoubtedly helps learners retain what they have learned and digest it more quickly and thoroughly.

Not only can multimedia and computer-based teaching materials elevate and modernize nature and society education beyond that of conventional methods, but they also place the student in a position of active participation. As a result of multimedia software, students may learn new information on their own, complete assignments and issues, search relevant databases, check their answers for accuracy, and fix mistakes after the fact.

If educators are expected to shape and educate future generations of social change agents, then they ought to be given greater support than they did in the past, as well as ongoing training and development of the competencies required for that kind of work (from initial education through seminars and courses that schools, colleges and vocational associations should do more to finance). This is especially true given how eager the younger generation is to utilize ICTs for education and their larger range of applications.

- **Benefits and Drawbacks of Computer use in Education**

Scientists' study indicates that computer-based teachings are more logical and that pupils learn more valuable, applicable knowledge that is applicable to real-world situations than traditional education in the classroom.

With computer technology, the whole group's teaching and learning process may be concurrently tailored. This implies that every student gets the chance to work and develop certain talents, skills, and knowledge in accordance with his or her own pace and degree of involvement. The extent to which a student advances will rely on his or her actions, expertise, and use of computer-based educational tools.

In contrast to traditional teaching methods, the learner is usually never confused about their understanding of the material. As a result, "every individual can realistically realize himself, more objectively evaluate his intellectual, character, willingness, and all other characteristics of importance for his own progress and development." This is mainly due to the way that modern ICT encourages students' intellectual curiosity, autonomous work and thought processes, and hands-on approach to problem solving.

When a student uses a computer, he picks up the necessary knowledge fast and effectively, giving him more time to concentrate on issues and phenomena that particularly interest him. If it runs into more significant issues, the computer gives it the necessary guidance to solve the issue.

The technological and informational capacities of modern computers are quite high, and they process and search data very quickly. Additionally, a link to the Internet is available for database

searches and consultation. Educators and learners alike might attempt to create their own knowledge vaults and libraries with the aid of this technology (articles, images, materials gathered on field trips, adventures, leisure courses). Responses from the students consistently demonstrate their enthusiasm for this approach to learning and their appreciation for the improvements made to the work, such as using the Internet to get knowledge.

Students can study individually or in groups, and curriculum can incorporate active and participatory research in the framework of constructivism and subject integration. This method makes it possible for students to study the content in accordance with their unique learning styles—also known as "personalization of learning." Hypermedia simulations may be utilized for both solo and group learning when it comes to educational applications. Although this system's requirements and contents can be quite complicated, it is more advised to utilize them for cooperative learning, for support and mutual exchange, and for acceptable input from educators

With the use of a computer, effective learning is no longer confined to a setting, a desk, a workday, or an hour. There are some topics that a person may research at home, on a journey, or on an outing, independent of the time or location of his present visit. In addition to being utilized for learning and information acquisition, computers are also employed for the very effective administration of the teaching process.

Even while utilizing computers in the classroom has several benefits, there are drawbacks as well. A challenge that several content-thematic units face is their complex programming. Even if educational or material-cognitive challenges are an essential part of a distinct educational process, it gravely complicates computerized instruction and keeps the attention solely on these issues, neglecting the educational dimension. Next, there are issues with adjusting to the requirements and skills of the pupils and with choosing and modeling programs that are appropriate.

If achieving educational objectives and tasks is the aim of teaching and learning, then the teacher must focus on improving the behavior, engagement, and examples of the pupils. There isn't a didactic model, an ideal, or an example like that for students to follow in the computer education process.

The computer provides extremely accurate feedback, but it is unable to diagnose why a certain student is falling behind on his work or what is preventing him from doing so. With most of his students, the teacher has the greatest ability to find and develop them via his own example and the strength of character.

Ultimately, global research has demonstrated that educational software frequently does not align with the mental, physical, and emotional development of children, and cautions against undermining children's growth throughout their formative years.

Thus, using digital technology to educate Nature and Society, as well as teaching in general, offers several benefits over teaching in a traditional classroom setting. Without a question, computer-based instruction has a significant advantage over traditional classroom instruction in terms of being able to customize teaching to each student's unique qualities and skills, using a variety of information sources, successfully monitoring learning, and providing more objective evaluation. However, the possibilities of computers dull in comparison to the power and influence of teachers when it comes to affirming the educational function, leading by example, understanding students' emotional, mental, and general psychophysical structure, and diagnosing the root causes of errors and problems that destroy individuals.

Conclusion

The computer era in which we currently reside has increasingly imposed demands for modernization and drastic adjustments in the way the teaching process is implemented in order to counteract the shortcomings of the still-dominant conventional teaching methods. With the advent of digital technology and increased social mobility, conventional methods of education and student delivery have become tedious and unworkable. Teachers must update their resources to make lessons more visually appealing so that students will be more motivated to study. Promotes the use of modern teaching resources and the introduction of novel models as part of current teaching practices.

Acknowledgements

ICT integration problems and challenges may be too widespread to be explored, although in-depth research on ICT integration in key disciplines is rarely done thus. More research on the obstacles instructors have while implementing ICT in the regular classroom would be beneficial. Furthermore, it would be ideal if this study could be carried out in prestigious private institutions as opposed to merely

public ones. This is due to the possibility that certain schools or colleges receive more funds, which facilitates a quicker and simpler ICT adoption process. It is advantageous to be able to compare several institutions in order to highlight their strengths and address any shortcomings that are found.

In addition, it is strongly advised that research be done comparing the use of ICT in teaching and learning in both public and private educational institutions. This is due to the fact that most private educational institutions allow students to bring devices to class, and ICT is used throughout the teaching and learning process. Findings of how well ICT integration works in private versus public educational institutions would be fascinating to examine.

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