Analysis of Information and Communication Technology's (ICT) use in Classroom Instruction and Learning

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Abstract

To adapt to the modern environment, information and communication technology (ICT) has become a crucial component of classroom instruction and learning. The conventional teacher-centered lecturing approaches have undergone considerable alterations as a result. However, in the context of Nepal, this new subject of study has not undergone thorough inquiry. In light of this, the goal of the seminar paper was to determine the functions of information and communication technology in formal teaching and learning. The study's basic foundations included an analysis of ICT-related policy provisions, a review of the theoretical and empirical literature, and an analysis of ICT-related published documents. Additionally, the data were gathered from surveys using closed-ended questions. The sample population of the teachers were ten, teaching in secondary level school. The data were analyzed and interpreted descriptively and statistically. The result of the data obtained revealed that the teachers have positive attitude regarding the use of ICT and ICT has made their teaching job easy and effective.

Keywords: ICT, teacher, student, and classroom instruction and learning

Introduction

Scientific technology has a significant influence on the modern world. The 21st century, sometimes known as the information era, is now in existence. It deals with how to convert, store, protect, process, transmit, and securely retrace information using electronic computers and computer software. Our manner of living and working is being revolutionised by it. It presents difficulties for every facet of our way of life. Many media technology instruments or devices have been created so far in order to provide access to information in every region of the world. Using scientific technology like a computer, fax machine, internet, or network (e.g. facebook, Twitter, Google, etc). In our rapidly changing world, it is more crucial than ever to teach children the value of lifelong learning, which entails continually seeking out new information and exercising initiative. This "living culture" refers to how the culture of the computer, internet, media, hypertext, interactive encyclopaedia, and, of course, the book has evolved over time (Goodwyn, 2002).

The world inside the computer screen has become more condensed thanks to scientific advancements. Through the use of computer technology and a network server, one can effectively observe the world. Learners can profit from online resources updated on a regular basis by hardware devices and software engines in this highly developed communication era. Online resources offer a wealth of information and can hasten a learner's professional progress.

The study, design, development, implementation, support, or management of computer-based information systems, notably software applications and computer hardware, is how the Information Technology Association of America (ITAA) defines it.

The changes brought about by ICT in the international setting have also had an impact on Nepal's educational system. The Government of Nepal, Ministry of Education, through national curriculum framework (NCF), has introduced ICT as a subject well as for instruction in school education.

Objectives

a) To find out the role of using ICT in classroom teaching and learning.
b) To identify the teacher's perception for using ICT in classroom teaching and learning.
c) To explore some major issues

Methods of the Study

The literature review serves as the study's primary foundation. I studied theoretical and empirical literature for the objective of my study to learn about the potential applications of ICT in classroom instruction and learning. I listed the provisions linked to ICT after studying policy documents. I also carried out survey research to explore how teachers perceive utilising ICT. I utilised a questionnaire to collect responses from the ten non-randomly chosen secondary school teachers in the Kathmandu Valley.

Limitations

The limitations of this study were as follows:

- The study was only limited to study the teacher's perception in using ICT.
- It was only limited to role of ICT in classroom teaching and learning.
- It only used the empirical research conducted in the field of education.

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● It was only limited to survey research.
It only consulted the perceptions of 10 teachers of secondary level.

Theoretical Literature Review

ICT is defined as a broad range of technology resources and techniques used for communication, information creation, dissemination, storage, and management. Our personal and professional lives have completely changed as a result of the development of information and communication technologies. ICT is defined as follows by the United Nations Development Program (UNDP, 2003):

Basically, information handling tools are a wide range of products, software, and services used to create, store, process, disseminate, and exchange information. They include both the "new" ICTs of computers, wireless technology, and the internet as well as the "old" ICTs of radio, television, and the telephone. Our "network world" is made up of a vast infrastructure of interconnected telephone services, standardised computing gear, the internet, radio, and television that is now able to function in concert with one another and combine to cover the entire planet.

ICT has been used in education for many years. Beginning in the early 1980s, computer-based materials for teaching languages, sometimes known as CALL (Computer Assisted Language Learning), began to appear. These materials included encyclopaedias and activities like CDC.

Technology is becoming more and more significant in both our personal and professional life, according to Kayser, McKenzie, Russell, and Sorin (2009, pp. 5–9). English language learners are also using technology more and more. Therefore, the issue of how to teach English using technology is crucial for all teachers in the modern era. Post-modern viewpoints allow us to understand the contributions that ICT provide to teaching and learning. The perception of everything has been reviewed and deconstructed in the postmodern era. The teaching and learning processes have also evolved. Teacher used to be everything in the past. Teachers used to be in charge of each and every activity, but today their responsibilities have changed. There is the idea of twenty-four hours of study spread across seven days. A time of science and technology is postmodernism. They are now able to choose the topics and timing to suit the preferences of the learners thanks to ICT. They have access to a wide range of information on the same topic as a result they view the same topic from multiple perspectives.

Commonly used ICT/ Web Tools in Classroom Teaching and Learning

The use and application of ICT/web tools for teaching and learning in the classroom depends on a variety of variables, including subject matter, class size, classroom management, teacher and student technological literacy, and tool accessibility. These are the typical ICT/web technologies used in classroom teaching and learning, taking into account these factors:

● **Mobile Device:** Its camera feature is used to create photo documentaries. And the instructor can give the class a theme for that documentary. Students can use the applications that are offered in it similarly. For instance, students can simply use their translator on Google to find a specific term rather than pulling out a dictionary or turning the pages of a book to find a piece of literature.

● **Multimedia Projector:** For multimedia presentations in the classroom, multimedia projectors are frequently employed. While instructing students, the teacher might use it to project his or her lecture combined with audio-visual elements on the white board.

● **Internet:** Email, multimedia text, audio, and video conferencing can all be used as language learning tools on the internet. In addition to actual English content, the internet is a source of information in the form of articles, courses, and conferences.

● **YouTube:** YouTube is a website that gives users access to a sizable library of videos from across the globe, which can be very helpful for classroom instruction.

● A laptop is a personal computer made specifically for travelling. Most of the standard parts of a keyboard, painting tool (also called as a touch pad or a pointing stick), and speakers are combined into a single unit on a laptop.

Policy

Regarding the roles of ICT in classroom teaching and learning there are some existing policies, they are as follows:

● Information technology policy, 2057
● National information law, 2067
● Guide, 2069 for the use of ICT in school Education
● National Curriculum framework, 2063
● SSRP, 2009-2015
● Three year plan, 2011-2013: Kathmandu NPC.

Research Works

This study makes no claims to being a breakthrough in computer-assisted teaching and learning in the classroom. On the use of computers to aid in learning and teaching in the classroom, numerous studies have already been conducted. I have read through a few of the research papers I have access to. As a result, this field of study is crucial. A few studies that are somehow linked to this subject are reviewed.

Gohiwarn (2009), conducted research on the theme "Effectiveness of using power point presentation in teaching English tenses" was an action research with single group to assess. The effectiveness of using PowerPoint presentations to teach English tenses with major goals produced a favourable outcome.

In a similar vein, Rabin Kumar K.C. (2012) performed research on "Use of the internet for language acquisition." Finding out how much the M.Ed. English first- and second-year students at Bhaktapur's Sano Thimi Education Campus utilise the internet to learn languages is the goal. He discovered that the vast majority of students utilise the internet in the classroom to learn languages.

The attitudes of higher secondary teachers toward the use of computers and the internet were the subject of research by Khanal (2008). The majority of instructors, according to his research, had favourable opinions regarding computers and the internet. Future expansion of computer and internet access was something that all teachers were enthusiastic about.

Policy Provisions

In Nepal's educational system, there is no comprehensive ICT in Education policy. However, the GoN's three-year strategy (2011–2013) and ICT policy (2010) have provided some policy and methods for the growth and integration of ICT in education. The following policy clause, for instance, is found in the IT policy from 2010: • Internet access expansion to all schools.

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- Working together to create trained human resources for ongoing, relevant, and high-quality education with national and international institutions.
- Encouragement of Industry-Academic Cooperation (IAC).
- Formulation and implementation of specific IT programme concentrating on students, teaching and schools in order to produce competent human resources.

The Policies and Provisions of the School Sector Reform Plan (SSRP) 2009-2015 are as follows:
- All schools will adopt and expand ICT-assisted teaching and learning.
- To create ICT infrastructures in schools and offer ICT-based educational options.
- Offer teachers and staff members opportunities for professional development through open and distance learning
- 2063 National Curriculum Framework policy and provision
- Three alternative approaches can be used to integrate ICT into classrooms:
- As a tool to educate other courses. • As a means to supply information and services, including school administration.
- As an academic curriculum subject to educate the students with abilities essential to prosper in the knowledge economy.

National Informatics Law 2067
- To launch the e-governance in the country.
- It is to support computer literacy of citizens and to adopt digital technology in education which is a positive beginning to the launching of technology facilitated or e-class pedagogy in teaching.

Information Technology Policy 2057
- To designate IT as a priority industry.
- To adopt a single window system in order to advance information technology.
- To provide emphasis to information technology research and development.
- To foster an environment that encourages private sector investment, keeping in mind the private sector's contribution to the advancement of information technology.
- To eventually make internet access available to every village development committee in the nation.
- It supports educational institutions and promotes domestic and international training to meet the demand for qualified personnel at different levels in the information technology industry.
- To develop websites for all government agencies and computerise their systems to improve information flow.
- To promote computer use in the private sector.
- to create a national centre for information technology.
- To increase the breadth of computer instruction and incorporate it into the curriculum starting at the school level.
- To use information technology to position Nepal in the international market.
- To gradually incorporate information technology into all official functions and to hold them accountable through the legal system.

The Recent Plan [three year plan (2011-2013) of GoN (NPC 2011)] has Included the Following Policies Related to ICT in Education
- Schools will be encouraged to use ICT in education to increase access to quality education in rural areas.
- Digital divide will be reduced.
- ICT will be integrated in all aspects of education.

ICT in Education Master Plan (2012-2017) Visions, Missions, Goals and Objectives
Vision
The vision of Master Plan is to ensure extensive use of ICT in Education Sector and Contribute for access to quality of education for all.

Mission
The mission of the master Plan is to narrow down the digital through the development of ICT infrastructures, human resources digital contents and system enhancement in education.

Goals
The main goal of ICT in education Master Plans are:
- To expand equitable access to education
- To enhance the quality of education
- To reduce the digital divide
- To improve the service delivery system in education.

Objectives
- To create ICT enable learning environment in educational institutions.
- To expand the interval access to schools and other educational institutions.
- To expand the accessibility to learning resources through educational resources sharing platform.
- To prepare teachers for ICT based education.
- To develop favorable environment for policy making and management for ICT based education.
- To enhance ICT competencies of human resources working in education sector.

Practices
ICT's importance in the postmodern era has been increasingly clear. The modern world is a world of science and technology where we have access to a variety of sources for information. Nowadays, there are essentially two methods used to implement ICT in education. First, ICT education is taught as a subject, and then the instruments of ICT are employed as a medium for teaching subjects to the students. In Nepal's private schools, computer education is encouraged beginning in first grade. However, it has been suggested as optional secondary-level subjects in government schools. The majority of schools have access to ICT. However, it is still a long way from being accessible in remote region schools. A large number of teachers have been trained in using technology to facilitate teaching and learning through the use of ICT.

The Role of Using ICT in Classroom Teaching and Learning
Finding out how ICT is used in classroom teaching and learning was the goal of my study. To support my recommendation, I mainly analysed the policy provisions, published materials, theoretical literature review, and

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empirical literature for the study. I also carried out survey research.

As numerous previously conducted empirical studies have demonstrated, ICT plays a very beneficial function in classroom teaching and learning. Its policy was highlighted in 2010 as well. Some regulations, such granting all schools access to the internet and encouraging industry-academic cooperation (IAC).

ICT assisted teaching and learning will be implemented and expanded in all schools, as noted in the SSRP (2009-2015), to create ICT infrastructures in classrooms and offer alternatives to traditional schoolingthrough the use of ICT.

ICT has continued to be a subject and a method of instruction in the national curricular framework's policy and provision. In order to maintain the use of ICT in classroom teaching and learning, IT policy (2057) has been created. They must designate the information technology sector as a priority industry and increase the scope of computer instruction by integrating it into the curriculum at the school level.

With a goal to enable widespread use of ICT in the education sector and contribute to access to high-quality education for all, the ICT in Education Master Plan (2012-2017) has already been put into action (EFA).

ICT use in Classroom Teaching and Learning According to Teachers

ICT as a tool for increasing the interaction and motivation of classroom teaching and learning. I've done some research to find out what instructors think about using ICT for instruction and learning in the classroom. They were discovered to be disposed to employing ICT in the classroom.

Learning and teaching activities have been greatly improved and assisted by information and communication technology. ICT has increased student autonomy and given them more authority. When using ICT to teach them, kids are more engaged and driven in the classroom. I have two years of teaching experience utilising ICT, and I am a master's student in English education. I used to mostly use a laptop, a projector, a power point presentation, and the internet. I contrasted the current teaching and learning environment with the time when I used to be taught without the use of any technology. ICT plays a wide range of important roles. The following are some of the ways to join them:

- ICT as a guide.
- ICT as an authentic source of information
- ICT as a partner for conversation.
- ICT as a notebook.
- ICT as a means for self directed learning.
- ICT as a tool to produce materials.

Sometimes during the teaching and learning process, we deal with topics that pupils find difficult to understand because they are abstract in nature. In order to bring the concrete items, content technology can therefore work better. For instance, when teaching about dinosaurs, we are unable to demonstrate the creatures' actual behaviour or activity. However, with the aid of technology, particularly YouTube, we are able to present actual behaviours related to dinosaurs.

As far as the use of ICT from the viewpoint of teachers is concerned. They have actually received a lot of assistance, and technology has found them to be extremely helpful. It has been observed that teachers have a very positive attitude toward using ICT. They employ it as a tool for creating and getting ready materials. I also polled ten teachers to find out how they felt about the use of ICT in the classroom for teaching and learning. The majority of teachers were found to have a good attitude about using ICT. They noted that the use of ICT in classroom teaching and learning has aided the task of teaching and learning.

Conclusion

ICT has been proven to be a very successful tool for enhancing classroom teaching and learning, which brings us to our conclusion regarding the subject. We cannot thrive in the age of globalisation by merely knowing about our immediate surroundings; rather, we must be able to compete intellectually with individuals throughout the globe, which is only achievable with the aid of ICT. The usage of ICT increases the autonomy of both teachers and students. ICTs have had a relatively minor impact on educational practise, according to data, but they will have a significant impact in the next years and play a significant role in changing many educational practises. ICT and the teaching and learning process, as well as the quality and accessibility of education, will all be significantly impacted by the continuous usage and development of ICT in education, extrapolating from current activities and practises. Academic success is influenced by learning motivation, the learning environment, and ICT use.

Teaching, learning, and research are all benefited by the introduction and use of ICTs in education. ICT has the potential to change how education is delivered and increase access to it. Additionally, it will provide flexibility so that students can access the education despite limitations related to time and location. It may have an impact on how students are taught and learn. By opening up new opportunities, it would give a stimulating environment and motivation for the teaching and learning process, which appears to have a significant impact on student performance and attainment. Similar to this, widespread accessibility to best practises and course materials in education that may be shared via ICT can support better teaching and increased student academic attainment.

References
1. MoE. *School sector reform plan.* Kathmandu: MoE, 2009.
2. MoE. *Shaikshaik suchana.* Kathmandu: MoE, 2011.
3. MoE. *Implementation guidelines on ICT in school education Nepal.* Kathmandu: MoE, 2012.
4. MoE. *National Curriculum framework/ Kathmandu:* MoE, 2063.
5. NPC. *Three year plan, 2011-2013.* Kathmandu: NPC, 2011.
6. *Sahanci, A. The effect of ICT usage on the classroom management. A case study in language teaching,* 2014.
7. Tamang, Shanti. *Beliefs of English teachers on the use of electronic media for professional development.* An unpublished M. Ed .Thesis. Kathmandu, T.U, 2015.
8. UNESCO (nd). *ICT in education toolkit for policy makers, planners and practioners.* Bangkok: UNESCO.
9. UNESCO. *Interateing ICT into education.* Bankok: UNESCO, 2004.
10. Wheeler S. Information and Communication Technologies and the Changing Role of the Teacher. *Journal of educational media.* 2001; 26(1):7-17.

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