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EDITORIAL BOARD

Dear Readers

Warm greetings!!!

The role of research in human life is an essential and also a vital pre-requisite for dynamic social order. New knowledge, new methods and new inventions become known and light up the path of man's vagueness and enhance comprehension of social interaction.

AKCE QUEST is a journal concerned with teachers, teaching and teacher education. AKCE QUEST aims to enhance theory, research, practice in teaching and teacher education through the publication of primary research and review papers.

This issue of the journal contains 7 research papers. We thank all the contributors and also invite researchers to send their articles to our journal.

Dr. A.R. Anandha Krishnaveni
Editor in Chief

PREFACE

One of the many challenges facing developing countries today is that of preparing their societies and governments for globalization and the information and communication revolution. Globalization and innovations in technology have led to an increased use of ICTs in all sectors - and education is no exception. Uses of ICTs in education are widespread and are continually growing worldwide. Information communication technologies (ICT) at present are influencing every aspect of human life. They are playing salient roles in work places, business, education, and entertainment. Moreover, many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information.

It is generally believed that ICTs can empower teachers and learners, making significant contributions to learning and achievement. Of the teachers interviewed on the effectiveness of ICT in education majority of them felt that introduction and use of ICT adequately will be extremely effective in children's learning and achievement.

Many teachers are reluctant to use ICTs, especially computers and the internet. Some of the reasons for this reluctance include poor software design, skepticism about the effectiveness of computers in improving learning outcomes, lack of administrative support, increased time and effort needed to learn the technology and how to use it for teaching, and the fear of losing their authority in the classroom as it becomes more learner-centered. In terms of using internet and other ICT as a resource for lesson preparation, most of the teachers interviewed, admitted to never or rarely using it, while very few used the internet to gather information sporadically or regularly.

ICT adds value to the processes of learning, and in the organization and management of learning institutions. The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. To be able to do so, a cadre of professionals has to be educated with sound ICT backgrounds, independent of specific computer platforms or software environments.

Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. ICTs can enhance the quality of education in several ways:
by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which when used appropriately, can promote the shift to a learner-centered environment.

ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images can be used to provide challenging and authentic content that will engage the student in the learning process. The teachers strongly felt that the visual aural combination if integrated judiciously with the textbook and syllabus, can work wonders in getting across abstract concepts and logics to the children in a short span of time. The potential of each technology varies according to how it is used.

A positive find is that all those teachers who are not well versed with the computer and other technology, expressed keen interest in undergoing training for the same. They felt

that if trained, they would be in a position to make use of resources available in the school. Support of school administrators and, in some cases, the community, is critical if ICTs are to be used effectively. In addition, teachers must have adequate access to functioning computers (or other technologies) and sufficient technical support. Shifting pedagogies, redesigning curriculum and assessment tools, and providing more autonomy to local schools all contribute to the optimal use of ICTs in education. Very few strong examples of integration of ICT into classroom teaching learning is visible, though some schools do use the audio visual aids and integrate teaching of some lessons. Largely however, even where ICT is used in the classes, it is usually as an information source and not a part of core learning process.

This special issue is a platform to share the views of utilization of ICT in education. I whole heartedly thank all the investigators for having analyzed the educational use of ICT and submitted articles for the publication of this journal.

Dr.A.R.Anandhakrishnaveni

Editor in Chief

CONTENTS

S.No	Title	Page.No
1	ICT FULFILLMENT OF SOCIAL NEEDS ***A.Subraja Devi***	01
2	STUDY ON THE IMPACT OF WHATSAPP USAGE IN EDUCATION AMONG THE PRE-SERVICE TEACHERS ***Mrs. T. Johncy Devanesam***	05
3	INTEGRATION OF CONSTRUCTION WITH DIGITIAL PORTFOLIO ***Mrs. J. Amala Arul Selvi***	10
4	INTEGRATION OF ICT AMONG COMMERCE TEACHERS IN MADUARAI ***Mrs. R. S. Gracebell***	13
5	THE FUNCTIONS OF ICT IN EDUCATION SEGMENT ***Dr.V.Kasirajan & Miss.Y.Julliot Asvini***	17
6	INFORMATION AND COMMUNICATION TECHNOLOGY INTEREST AMONG TEACHER EDUCATORS ***Sr. M. Amalorpavam***	21
7	ICT USE IN SCHOOL ADMINISTRATION ***S. Krishnakumari***	25
8	ICT VS DIGITAL INDIA ***Dr. A. Mary Delphine***	28
9	AN EFFECTIVE USE OF ICT IN SCHOOLS ***M.Raja Gowsalya & R.Vaitheeswari***	31
10	INTEGRATION OF ICT IN TEACHING AND LEARNING ***R.Pavithra & G. Sivapoornima***	35
11	"INTERNET ADDICTION AMONG B.ED STUDENTS IN MADURAI DISTRICTS" ***S. Anbalagan***	38
12	A SURVEY ON INTERNET UTILITY AMONG COLLEGE STUDENTS ***C. Meenakshi & Dr.M.Vasimalairaja***	42
13	CHALLENGES IN IMPLEMENTATION OF ICT ENABLED EDUCATION IN RURAL SCHOOLS ***Mrs. A. Maria Jeyachandra Rani***	45
14	ICT INTEREST OF B.ED., STUDENT TEACHERS ***Mrs. L. Vinnarasi***	50
15	STRATEGIES FOR IMPROVING THE EDUCATIONAL VITALITY TO PROMOTE STUDENTS ACADEMIC EXCELLENCE ***Dr.C.Shirley Moral***	53
16	ICT IN EDUCATION ***Dr. N. Subramanian***	57
17	M-LEARNING Vs REAL CLASSROOM TEACHING ***Dr. P. Mallapparaj***	61
18	ICT SKILLS AMONG B.Ed. STUDENTS ***S. Marthal & Dr. P. Pandia Vadivu***	63
19	CLASSROOM INTERACTION USING ICT ***V. Ragavikarthika & K.Durga***	67
20	EFFECTIVE TEACHING STRTEGIES IN CURRENT EDUCATION ***S. Ramalakshmi***	70
21	ICT TOOLS FOR ENGLISH LANGUAGE LEARNING ***T.Vijaya Lakshmi & Dr. T. Ranjith Kumar***	74

22	UTILIZATION OF ONLINE PROGRAMS BY TEACHER EDUCATORS IN TEACHING – LEARNING PROCESS AT B.ED LEVEL ***A. Sasikala***	77
23	AWARENESS OF ICT AMONG TEACHER EDUCATORS ***A. Vences Cyril***	80
24	ICT IN EDUCATION: ANDRIOD APPLICATIONS FOR CLASSROOM TEACHING ***S.S.Helen Sathia Sheela***	83
25	SMART CLASS- WHITE BOARD E-EVOLUTION IN EDUCATION ***Mrs. R.Libin Saral***	87
26	RELATIONSHIP BETWEEN ICT AND EDUCATION-ICT A BOON FOR TEACHING ***S. Akila Priyadharshini & M. Palaniselvi***	93
27	USAGE OF DIGITAL TECHNOLOGY AMONG SCIENCE STUDENT TEACHERS ***Mrs. C. Soorya***	97
28	ICT IN ENGLISH LANGUAGE TEACHING AND LEARNING ***R.Viswanathan***	101
29	ACCESSIBILITY OF ICT AMONG HIGHER SECONDARY SCHOOL TEACHERS WORKING IN GOVERNMENT AND UN AIDED SCHOOLS ***I.Uma Maheswari***	105
30	APPLICATION OF ICT AND BIG DATA ON IMPROVING FLIPPED CLASSROOM ***M. Priyanga***	109
31	A STUDY INTO ATTITUDE TOWARDS MATHEMATICS AMONG HIGHER SECONDARY SCHOOL STUDENTS IN MADURAI DISTRICT ***Dr. M. Arockia Priscilla***	113
32	ENERGY EFFICIENT ROUTING PROTOCOL FOR MOBILE SINK IN WIRELESS SENSOR NETWORKS ***A. Rehash Rushmi Pavitra & G.Abirami***	119
33	AWARENESS OF ICT AMONG B.Ed., BIOLOGICAL SCIENCE STUDENTS" ***Mr. S. Venkatesh & Dr. C. Ramesh***	122
34	TECHNO CLASSROOM IN 21st CENTURY ***A.S.Kannan***	127
35	ROUTING USING SWARM INTELLIGENCE IN MOBILE AD HOC NETWORKS ***Hepsibah Shirley APG***	133
36	EMERGING ISSUES IN INORMATION COMMUNICATION AND TECHNOLOGY **Mrs.S.Sivagama Sundari**	140
37	DEVELOPING ICT LITERACY AMONG TEACHERS ***S. Saranya***	143
38	DECISION TREE AND NEURAL NETWORK CLASSIFICATION IN DATA MINING: AN OVERVIEW ***PG. Jebas Sinthiya & U. Swarnalatha***	148
39	LOOK BACK ON MANET ***S. Shieka Hinanas & Sanjeeve Kumar. S***	154
40	USING INFORMATION COMMUNICATION AND TECHNOLOGY (ICT) IN TEACHING TAMIL LANGUAGE ***S. Kasthuri***	160
41	ICT IN EDUCATION POLICY ISSUES ***M.Kalimuthu & G.Revanth***	164
42	EFFECTIVE USE OF ICT IN SCHOOL EDUCATION ***A.Ramkumar***	169

ICT FULFILLMENT OF SOCIAL NEEDS

A.Subraja Devi

Abstract

ICT plays an important role in enhancing the social fields. Net Banking assists customers to validate their account and receive instruction. "Successful e-learning depends on the self- motivation of individuals to study effectively". Digital India programmme aims to provide a thrust to the nine pillars of growth areas. Farm book is a novel ICT tool for agricultural extension that is currently being field tested by the Catholic Relief Services. E-health is to provide the advantages of diagnosis, especially in the areas of cardiology, pathology, dermatology, and radiology. A home is an ideal place for decoupling processes formerly linked in time and space. Digitization and miniaturization is the

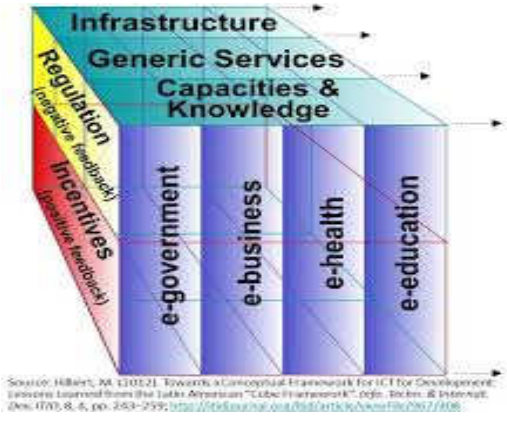
Keywords: *Self- motivation, Catholic Relief Services (CRS), infrastructure, cardiology, pathology, dermatology, radiology, diagnosis.*

Introduction

According to Toomey," ICT generally relates to those technologies are used for accessing, gathering, manipulating and presenting for communicating information. ICT is a comprehensive term that includes any communication device or application such as radio, television, cellular phones, computer and network, hardware and software of ICT, satellite system as well as the various services and applications associated with them such as videoconferencing.

ICT Developments

ICT development includes many types of infrastructure and services, ranging from telecommunications, such as voice, data, and media services, to specific applications for our social needs, such as banking, education, or health, climate changes and environment, agriculture, transport and business management to the implementation of electronic .



ICT in Social Needs

ICT in Education

ICT perform main roles in education like e-journal, blended and Online- learning, e-library etc. The journals which are web based and available online are known as E-journal (electronic journals). Blended learning is also electronic or web based education. E-learning: "Successful e-learning depends on the self-motivation of individuals to study effectively". It can be defined as learning facilitated and supported through the use of information and communication technology'. E-learning can accommodate different learning styles and support learning with a variety of media. It provides faster learning at reduced costs, increased access to learning.

E-Book: The E-Books are designed to facilitate the rapid retrieval of discrete items of information to answer specific questions. That is specific concepts can be quickly and simply identified and retrieved from the entire articles or books in order to answer the specific reference questions.

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Online learning: "Teaching and Learning mediated by a Computer". Advancement in ICT, provide opportunities to design learner-centered, interactive, efficient, easily accessible and flexible learning devices. It is basically Internet based education and utilizes computer mediated communication (CMC) including e-mail, computer conferencing, and file transfer etc. Online education has all the strong points of face to face learning at the same time it has the flexibility of time, place and place. Anytime and anywhere communication enhances collaborative and lifelong learning.

ICT in Legal System

Globalization driven by ICT is having a phenomenal on acquisition of legal, and other relevant learning, teaching and research materials in law libraries across the country. Through ICT, lawyers and students can have access to current court proceedings/cases and law reports anywhere, anytime and in any form in the country.

ICT in Business and Management

ICT is an essential part of national infrastructure and factors greatly in both public and private sector business enterprises. It creates business opportunities, especially for companies located from urban centers, and improves links among firms, suppliers and clients. When used well, ICT can also make management and operation more efficient.

ICT in Banking

ICT in the banking sector it is used in concepts like Internet Banking , Automated Teller Machine (A.T.M) and Debit & Credit card, etc. It assists customers to validate their account numbers and receive instruction.

ICT products in use in the banking industry include Automated Teller Machine,
Smart Cards, Telephone Banking, MICR, Electronic Funds Transfer, Electronic Data
Interchange, Electronic Home and Office Banking.

The visible benefits of IT in day-to-day banking in India are quite well known. There's 'Anywhere Banking' through Core Banking Systems, 'Anytime Banking' through new, 24/7/365 delivery channels such as Automated Teller Machines (ATMs), and Net and Mobile Banking. More than 22% of the internet users in India use online banking.

There are certain advantages of Internet Banking are:

1. 24 hour banking facility.
2. Access your account from anywhere by just logging into the bank's site and entering your id and password. You can check your account information and perform transactions from anywhere via a smartphone, laptop, or any other Internet-accessible device.
3. Some banks provide online portfolio management services. Stocks, bonds, and other investments can be managed with online banking.
4. Booking Railway tickets through online banking has become a widely used service by customers.
5. Another area is Online Shopping. The market size of online shopping industry in India is estimated at Rs. 2000crores and is expected to reach Rs. 7000crores by 2015.
6. Online banking also helps you to pay your utility bills like electricity, telephone….

Digital India Programme

Digital India programme is centered on three vision areas: digital infrastructure as a utility to every citizen, governance and services on demand, and digital empowerment of citizens. It aims to provide a thrust to the nine pillars of growth areas: broadband highways, universal access to mobile connectivity, public internet access, e-governance, electronic delivery of services, information for all, electronic manufacturing, IT for jobs, and early harvest programmes.

ICT in Agriculture

ICTs for increased agricultural productivity and strengthening the Agricultural sector include timely and updated information on agriculture related issues such as new varieties release, emergence of new threats such as diseases, weather forecast, pricing control, warning alerts etc.Some uses of ICT in Agriculture:

- Increasing efficiency, productivity and sustainability of small scale farms.
- Information about pest and disease control, especially early warning systems, new varieties, new ways to optimize production and regulations for quality control.

Farmbook

Farm book is a novel information communication technology (ICT) tool for agricultural extension that is currently being field tested by the Catholic Relief Services (CRS) in Southern and East Africa. Farmbook enables extension agents to help farmers plan their businesses, assess productivity, and profitability of their farming enterprise.

ICT in Health Care

Telemedicine is likely to provide the advantages of tele-diagnosis, especially in the areas of cardiology, pathology, dermatology, and radiology besides effectively operationalizing Continuing Medical Education (CME) program.

Telemedicine

Telemedicine can be defined as the use of electronic communication technology to exchange patient information and provision of health care services at remote locations. Global Telemedicine has gone far beyond providing health care services alone. Use of (ICT) in health can be broadly in four areas are;

- **Health and Education**: When ICT is applied to medical education, it is possible to make high quality education available pan India seamlessly.
- **Hospital Management System** The management of medical colleges and district hospitals can be strengthened significantly with the application of Hospital Management System.
- **Health Research**: ICT can potentially transform the medical scene in India, by bringing about a sea-change in medical research.
- **Health and Management**: Electronic Medical Records (EMR), is a fundamental pre-requisite in using ICT seamlessly in healthcare Introduction.

ICT in Transportation

ICT plays a vital role in the sector of transportation. The ICT market continually launches new applications that support traffic congestion control, transport logistics and transport infrastructure management. The ICT applications have the potential to increase the efficiency of transport networks and decrease the negative externalities, e.g. decrease the congestion and increase the quality of transport networks.

ICT in E-Governance and Rural Development

Government of India is having an ambitious objective of transforming the citizen-government interaction at all levels to by the electronic mode (e-Governance) by 2020.ICT is crafted to enable the Electronic Governance through *wireless* communication. India is a country of villages and to improve and sustain the overall prosperity to provide impetus for long-term e-governance within the country At state level the various rural E-governance projects such as SETU Project in Maharashtra etc, projects that have been providing excellent services and saving time and money.

ICT in Trends

The pace of innovation in ICT is high in trends. New generations of products succeed one another in quick succession. For instance, the current expectation is that a mobile telephone will be followed after

nine months by the next generation of mobile telephone, which is smaller, uses less energy and provides more services.

A few interesting trends are:

1. Continuous *miniaturization* of individual components (chips, digital cameras (the size of a sugarcube), mobile telephones, monitors).
2. *Digitization* of text, image, voice, data making it possible to develop applications that can handle all sorts of data; this enables, for instance, telephony via the Internet (Voice over IP) and viceversa, Internet via the telephone (WAP: Wireless Application Protocol).
3. *Convergence* of formerly separate networks.

ICT in Home Environment

The home is an ideal place for decoupling processes formerly linked in time and space. A person can bank electronically at any time of the day and no longer needs to visit the bank. The energy saving from tele-activities arises from the fact that the suppliers (for example banks) need fewer people, fewer offices, fewer activities that less transport and distribution of physical goods is needed and the saving of paper communication.

Conclusion

ICT plays an important role in all our social needs like education, banking, transportation, health care, agriculture etc. Internet projects provide excellent services and save time and money.

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STUDY ON THE IMPACT OF WHATSAPP USAGE IN EDUCATION AMONG THE PRE-SERVICE TEACHERS

Mrs.T.Johncy Devanesam

Abstract

The present study was conducted on a sample of 115 students from various colleges of Education to find out the Impact of WhatsApp usage in Education among the Pre-service teachers. The researcher used a self constructed tool which consists of 20 items describing the positive and negative impacts of WhatsApp usage in Education. The collected data was scored, analysed by applying various statistical techniques like mean, S.D; t-test and F-test. Findings revealed that there is a significant difference between the male and female pre-service teachers, regarding the positive impact of WhatsApp usage in Education, a significant difference between the pre-service teachers with respect to their age, regarding the positive and negative impact of WhatsApp usage in Education. There is a significant difference between rural and urban pre-service teachers, the pre-service teachers with respect to their medium of study regarding the negative impact of WhatsApp usage in Education. ANOVA results show that, there is a significant difference between the pre-service teachers , regarding the negative impact of WhatsApp usage in Education with respect to their experience in using WhatsApp and also there is a significant difference between the pre-service teachers , regarding the negative impact of WhatsApp usage in Education with respect to the number of times in checking WhatsApp messages. It can be concluded that there is an impact of WhatsApp usage in Education among the pre-service teachers both positively and negatively. From this study, it is revealed that students are encouraged to use any social media in a positive way and if the future teachers have the awareness of using WhatsApp in a positive way ,it will help the society ie. the future student generation will be mentored and monitored to use the technology in an useful manner.

Introduction

WhatsApp is one of the most important and less costly social media networks to use. "WhatsApp" is one of those mobile applications which has made its space and importance in every Smartphone. Its introduction enables one to send free messages, videos, audios and even pictures to friends and loved ones regardless of location and national boundaries. Jan Koum and Brian Acton were the inventors of the WhatsApp application in 2009. It has been available on the market since 2010 and is developed mainly for the purpose of replacing the existing SMS platform by giving a free of charge service. This new phenomenon is parallel with Vygotsky Constructivist Learning Theory which suits the use of WhatsApp. This theory aims to develop the students' social interaction as well as to raise and share information (Vygotsky, 1978). This is where the learning resources can be accessed anytime, anywhere and in any features. It could help in developing the student's learning performance though. Therefore, this application has become very popular in the last two years where it had gained over 350 million users Cohavi, 2013). By having a smartphone, subscribing to the internet data plan and installing the application, it allows communication with everyone. It allows the user to create WhatsApp groups among the teacher and students by separating each group according to certain practicum's to communicate among each other. It attracts the people like a powerful magnet. As the result, it causes lots of loss of precious time of people. Though, it is dependent on the user on the extent of using it, slowly it has become an essential requirement to fulfil. Thus, the aim of this research is to investigate the significance of using WhatsApp as a learning tool in Education and define its use based on the student teachers 'perceptions. As this is a new phenomenon and less research had been done, therefore I conducted this study. Many positive and negative impacts were viewed regarding the educational and technical issues related to the use of WhatsApp in Education.

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Review of Related Literature

There are many studies done on WhatsApp and youth both in Indian and international scenario. .

Dr. Neelamalar & P.Chitra, Anna University (2009)

They conducted a study to identify the issues regarding the youth's social networking usage and the resultant impact on their social interactions. The sample size was 100 [50 teens 17-19yrs and 50 youths 20-22yrs]. The findings of the study include 98 % number of people who are the members in social networking sites in which 68% are strangers, 7% are those who have very intimate relationship with their online friends (strangers) and 20% are good friends with the virtual strangers. Thus it is a positive indication that Indian youth are not only techno-savvy and socially active, but they also possess social consciousness. A study entitled

"The impact of WhatsApp messenger usage on students performance in tertiary institutions in Ghana" by Johnson Yeboah and George Dominic Ewur published in the journal of Education & Practice in the year 2014, has concentrated on the negative aspects of WhatsApp. Their study proved that the usage of WhatsApp has impacted negatively on the performance of students in Ghana. Some of the findings of the study were the following. WhatsApp usage has led to lack of concentration during lectures, consumes much of students study time, distracts students from completing their assignments, destroys students' spellings and grammatical construction of sentences. Facebook and WhatApp were also found as common application used for information sharing and academic communication among the university students (Devi& Tevera, 2014). Same finding was encountered by Lenhart (2007) where he stated that WhatsApp and emails are creating the ease of information sharing among students where every thought and feelings are translated into words. They tend to write more and it is supported by other educators where they could see the impact of this new phenomenon could teach the students about language evolution. Overall, responding through WhatsApp was viewed as thriving because it helped to develop the students' voice. The use of technologies like smartphones has gradually changed the traditional way of communication like handwriting (Ardilla, 2004).

Objectives of the study

1. To find out the significant difference in the impact of WhatsApp usage in Education between male and female pre-service teachers and also who belong to rural and urban area.
2. To find out the significant difference in the impact of WhatsApp usage in Education with respect to their age, Optional subjects, medium of study
3. To find out the significant difference in the impact of WhatsApp usage in Education among pre-service teachers with respect to their experience in using WhatsApp
4. To find out the significant difference in the impact of WhatsApp usage in Education among pre-service teachers with respect to the number of times in checking WhatsApp messages per day
5. To find out the significant difference in the impact of WhatsApp usage in Education among pre-service teachers with respect to the hours which they spent in using WhatsApp per day.

Hypotheses of the study

1. There is no significant difference in the impact of WhatsApp usage in Education between male and female pre-service teachers and also who belong to rural and urban area.
2. There is no significant difference in the impact of WhatsApp usage in Education with respect to their age, Optional subjects, medium of study
3. There is no significant difference in the impact of WhatsApp usage in Education among pre-service teachers with respect to their experience in using WhatsApp
4. There is no significant difference in the impact of WhatsApp usagein Education among pre-service teachers with respect to the number of times in checking WhatsApp messages per day
5. There is no significant difference in the impact of WhatsApp usage in Education among pre-service teachers with respect to the hours which they spent in using WhatsApp per day

Method

Survey method had been used for this study.

Sampling Technique and Sample Size

The study was conducted on a sample of 115 students from various colleges of Education. Students from each college were selected randomly**.**

Tool

The researcher used a self constructed tool which was used to find out the impact of WhatsApp usage among the pre service teachers. The tool consists of 20 items describing the positive and negative impacts of WhatsApp usage in Education.

Data Analysis

The collected data were scored, analysed by applying various statistical techniques like mean, S.D; t-test and F-test

Table 1 t-Table Showing the Significant Difference between the Positive and Negative Impacts of WhatsApp Usage in Education of Pre-Service Teachers with Respect to their Background Variables

Variables and Categorization		Positive Impact					Negative Impact				
Variables	**Category**	**N**	**Mean**	**S.D**	**t**	**p-value**	**N**	**Mean**	**S.D**	**t**	**p-value**
Sex	Male	26	9.4615	.70602	4.67	**0.00***	26	8.5385	1.52920	0.63	0.53
	Female	89	7.6854	1.89854			89	8.2584	2.09723		
Age	Below 23	51	9.1569	.83361	6.41	**0.00***	51	9.2941	1.26955	5.21	**0.00***
	23 and Above	64	7.2344	2.00588			64	7.5469	2.10766		
Locality	Rural	86	7.9302	1.92073	1.57	0.12	86	8.1860	2.04371	1.27	**0.02***
	Urban	29	8.5517	1.59432			29	8.7241	1.75044		
Optional Subject	Arts	42	8.4524	1.48492	1.61	0.11	42	8.7143	1.78456	1.62	0.10
	Science	73	7.8767	2.02035			73	8.0959	2.06266		
Medium of study	Tamil	53	9.2075	1.13270	7.19	**0.00***	53	8.7170	1.82269	2.00	**0.04***
	English	62	7.1290	1.82410			62	7.9839	2.06049		

Since p value is less than 0.05, regarding the positive impact of WhatsApp usage in Education, there is a significant difference between the male and female pre-service teachers, hence null hypothesis is rejected. Since p value is less than 0.05, regarding the positive and negative impact of WhatsApp usag in Education e, there is a significant difference between the pre-service teachers with respect to their age, hence null hypothesis is rejected. Since p value is less than 0.05, regarding the negative impact of WhatsApp usage in Education, there is a significant difference between rural and urban pre-service teachers, hence null hypothesis is rejected. Since p value is less than 0.05, regarding the positive and negative impact of WhatsApp usage in Education, there is a significant difference between the pre-service teachers with respect to their medium of study, hence null hypothesis is rejected.

For all the other variables since p value is greater than 0.05,there is no significant difference, hence null hypothesis is accepted.

Table 2 F-Table Showing the Significant Difference between the Positive and Negative Impact of WhatsApp Usage among the Pre-Service Teachers with Respect to their Experience in Using WhatsApp

Impact on WhatsApp Usage	Sources of Variation	Sum of Squares	df	Mean Square	F	Sig
Positive impact	Between Groups Within Groups Total	3.877 389.254 393.130	2 112 114	1.938 3.475	.558	.574
Negative Impact	Between Groups Within Groups Total	37.875 409.220 447.096	2 112 114	18.938 3.654	5.183	.007

Since sig–value in the table is less than 0.05 ,regarding the negative impact of WhatsApp usage in Education among the pre-service teachers, there is a significant difference between the pre-service teachers with respect to their experience in using WhatsApp and sig–value in the table is greater than 0.05, regarding the positive impact of WhatsApp usage in Education among the pre-service teachers, there is no significant difference between the pre-service teachers with respect to their experience in using WhatsApp.

Table 3 F-Table Showing the Significant Difference between the Positive and Negative Impact of WhatsApp Usage in Education among the Pre-Service Teachers with Respect to the Number of Times in Checking WhatsApp Messages per Day

Impact on WhatsApp usage	Sources of variation	Sum of Squares	df	Mean Square	F	Sig
Positive impact	Between Groups Within Groups Total	1.418 391.712 393.130	2 112 114	.709 3.497	.203	.817
Negative Impact	Between Groups Within Groups Total	36.867 410.229 447.096	2 112 114	18.433 3.663	5.033	.008

Since sig–value in the table is less than 0.05 , regarding the negative impact of WhatsApp usage in Education among the pre-service teachers, there is a significant difference between the pre-service teachers with respect to the number of times in checking WhatsApp messages and sig–value in the table is greater than 0.05 , regarding the positive impact of WhatsApp usage in Education among the pre-service teachers, there is no significant difference between the pre-service teachers with respect to the number of times in checking WhatsApp messages.

Table 4 F-Table Showing the Significant Difference between the Positive and Negative Impact of WhatsApp usage in Education among the Pre-Service Teachers with Respect to the Hours Which they Spent in using WhatsApp Per Day

Impact on WhatsApp usage	Sources of variation	Sum of Squares	df	Mean Square	F	Sig
Positive impact	Between Groups Within Groups Total	2.524 390.606 393.130	2 112 114	1.262 3.488	.362	.697
Negative Impact	Between Groups Within Groups Total	9.000 438.096 447.096	2 112 114	4.500 3.912	1.150	.320

Since the sig–value in the table is greater than 0.05, regarding the positive and negative impact of WhatsApp usage in Education among the pre-service teachers, there is no significant difference between the pre-service teachers with respect to the hours which they spent in using WhatsApp per day.

Findings and Conclusion

- There is a significant difference between the male and female pre-service teachers, regarding the positive impact of WhatsApp usage in Education
- There is a significant difference between the pre-service teachers with respect to their age, regarding the positive and negative impact of WhatsApp usage in Education
- There is a significant difference between rural and urban pre-service teachers, regarding the negative impact of WhatsApp usage in Education
- There is a significant difference between the pre-service teachers with respect to their medium of study, regarding the negative impact of WhatsApp usage in Education
- For all the other variables, there is no significant difference regarding the positive and negative impact of WhatsApp usage in Education of pre-service teachers.

ANOVA results show that there is a significant difference between the pre-service teachers, regarding the negative impact of WhatsApp usage in Education with respect to their experience in using WhatsApp and also there is a significant difference between the pre-service teachers, regarding the negative impact of WhatsApp usage in Education with respect to the number of times in checking WhatsApp messages. There is no significant difference between the pre-service teachers regarding the positive and negative impact of WhatsApp usage in Education with respect to the hours which they spent in using WhatsApp per day.

It can be concluded that there is an impact of WhatsApp usage in Education among the pre-service teachers both positively and negatively. It is also clear that the pre-service teachers spent time in this mobile app which develops their social interaction in teaching learning process and at the same time it also kills their precious time for learning their subjects. From this study, it is revealed that students are encouraged to use any social media in a positive way and if the future teachers have the awareness of using WhatsApp in a positive way, it will help the society ie. The future student generation will be mentored and monitored to use the technology in a useful manner.

INTEGRATION OF CONSTRUCTION WITHH DIGITIAL PORTFOLIO

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Introduction

Construction transforms the student from a passive recipient of information to an active participant in the learning process. Knowledge is constructed according to the opinion of constructivists. This paper speaks about the role of digital portfolio in constructing knowledge.

ICT in Teacher Education

Teaching is one of the most challenging professions in our society, where knowledge is expanding rapidly and this expansion demands teachers to use new technologies in their classrooms. Information and Communication Technology has become, within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education. The United Nations Development Program considers ICT as a tool for developing countries to progress and leapfrog to the developed world. India during the last decade has also embarked on ICT for development in a rather big way and sought to transform India into what has been termed as Knowledge Superpower.

Teacher education program without integration of ICT could not be said to be a complete one. The incorporation of ICT in education and training programs has profound influence on teaching and teacher preparation. Educational systems around the world are under increasing pressure to use the new Information and Communication Technologies to teach students the knowledge and skills they need in the 21st century. With the emerging new technologies, the teaching profession is evolving from teacher-centered, lecture-based instructive learning environments. For India to reap the full benefits of ICT in learning and to employ it as a prime tool to become a knowledge economy, it is considered essential that both pre and in-service teachers are able to effectively use these new tools for learning.

Constructivism

Constructivism is basically a theory based on observation and scientific study about now people learn. It says that people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. When we encounter something new, we have to reconcile it with our previous ideas and experience, may be changing what we believe, or may be discarding the new information as irrelevant. In any case, we are active creators of our own knowledge. To do this, we must ask questions, explore, and assess what we know. In the classroom, the constructivist view of learning can point towards a number of different teaching practices. In the most general sense, it usually means encouraging students to use active techniques (experiments, real world problem solving) to create more knowledge and to reflect on and talk about what they are doing and how their understanding is changing. The teacher makes sure that s/he understands the students' pre existing conceptions, and guides the activity to address them and then build on them. The constructivist teacher provides tools such as problem-solving and inquiry-based learning activities with which students formulate and test their ideas, draw conclusions and inferences, and pool and convey their knowledge in a collaborative learning environment. Constructivism transforms the student from a passive recipient of information to an active participant in the learning process. Always guided by the teacher, students construct their knowledge actively rather than mechanically ingesting knowledge from the teacher or the textbook.

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Use of ICT to Promote Constructivist Learning

In classrooms today, the role of the teacher needs to change from the traditional role of prescript or to that of an orchestrator of learning which necessitates the designing of ICT integrated classrooms promoting higher order cognitive skills. The focus ought to be more on enquiry based approaches often going beyond the prescribed curriculam to seek answers to the problem under concern but now from different perspectives. This is challenging both for the teacher as well as for the learner but eventually the process of self-learning ensures a more rigorous approach and deeper understanding of facts. The focus is more on the process of information acquisition, the critical and analytical thinking involved in acquiring information from multiple sources, analyzing this information and then designing the learning outcomes in aesthetic presentations. Such a model of learning focuses more on the process over the product, acquiring information from multiple sources, analytical and critical thinking and finally a comprehensive evaluation assessing different areas of students academic growth. One of the significant inputs in this method of studying is the periodic scaffolds provided to ensure a framework in which the discovery and investigation is conducted; while meaningful learning is the objective, certain curricular requirements cannot be compromised in the process of exploration.

Role of ICT in Constructive Classrooms: Designing the e Portfolio

Constructive theory, specifically Vygotsky's Social Constructivism, perceives e portfolios as social learning environment. The learner constructs meaning through interaction with this environment whereby the portfolio represents a learning process and record of individual or constructivist portfolios utilizes self-assessment through reflection and peer evaluation. It is a combination of a number of learning tasks and a compilation of the outcomes achieved as a result of the processes undergone therein. It emphasizes the importance of process over the product. A portfolio is a collection of artifacts that document student progress toward one or more instructional goals in one or more courses. Elements that are often included in portfolio include drafts of students work, student self- assessment, parent and teacher assessment, finalized written products, photographs of artwork, sewing projects, industrial technology creations or other hands on coursework and recording of musical or theatrical performances, along with sections dedicated to personal and career goals, educational paperwork such as attendance, discipline and grades and awards, honors in and outside of school that demonstrate a student's leadership, character, scholarship or community service.

There are certain software programs that can be used by students and different tools are meant for achieving different goals. These software programs include spreadsheet and database applications, concept mapping programs, multimedia and hypermedia development software. When students are actively involved in constructing a system using the software, they are engaged in many thinking tasks. The student must participate in "selecting contents, the criteria for selection and the criteria for judging merits". Otherwise, the portfolio is just another group of assignments dictated and judged by the teacher, whereby no critical thinking or decision-making rights have been given to the student. The true goal of portfolio fully aligns with constructivist thought when it involves students in their own education so that they can take charge of their personal collection of work, reflect on what makes some work better, and use this information to make improvements in future work. Students will construct more enduring knowledge when they are the driving force behind the learning and the teacher promotes by helping them "collect, select, reflect, project, present and connect".

Collection

Teachers and students learn to save artifacts that represent the successes in their day-to-day teaching learning.

Selection

Teachers and students review and evaluate the artifacts they have saved, and identify those that demonstrate achievement of specific standards.

Reflection

Teachers and students become reflective practitioners, evaluating their own growth over time and their achievement of the standards, as well as the gaps in their development.

Projection

Teachers and students compare their reflections to the standards and performance indicators and set learning goals for the future. This is the state that turns portfolio development and supports lifelong learning.

Presentation

Teachers and students share their portfolio with their peers. This is the stage where appropriate public commitments can be made to encourage collaboration and commitment to professional and commitment to professional development and lifelong learning.

Connection

This is the part of the portfolio that can make the process real for many students. Students can demonstrate their proficiencies and learning growth by presenting or exhibiting the portfolio to an authentic audience. When students know that their work is going to be "published" or viewed by people other than themselves and the teacher, pride of ownership becomes an issue. They want to show their best efforts when they know other students, parents, community members, college admissions officers, and possible employers will be looking.

Conclusion

Constructivism claims that learn construct knowledge most naturally and completely while they construct some artifacts. Perkins argues that knowledge acquisition is a process of design that is facilitated when learns are actively engaged in designing knowledge rather than merely interpreting or encoding it. Learners benefit the most from the learning process when they are the designers of the instructional experiences. *e portfolio* helps them to design instructional experience. Hypermedia is a powerful design tool for learners to construct knowledge. Hypermedia composition places students in the designer's seat to that they may construct their own understandings, rather than interpreting the teacher understands of the world.

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INTEGRATION OF ICT AMONG COMMERCE TEACHERS IN MADURAI

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Abstract

The electronic frontier is not something that education has embraced with open arms. There is a natural tendency to resist new ways of doing things. Our commerce teacher's attitude is responsible for the slow acceptance of modern technology in the educational environment. The paper explores the apprehensions of teacher in the implementation of technology and offers suggestions to integrate technology in the classrooms. Though the study is confined to Madurai District, the findings may be relevant to the entire commerce education. 1. The level of Integration of ICT among Commerce Teachers at Madurai District is found to be Average. 2. The Male and Female commerce teachers differ in Integration of ICT. Female teachers are significantly higher than the Male teachers on their ICT integration 3. The Rural and Urban B.Ed., trainees do not differ significantly in their Awareness and differ significantly in their Integration on ICT. 4. The Commerce and Science teachers do not differ significantly in their Integration of ICT.

Introduction Meaning of Commerce Education

Chesseman defined Commerce Education As - "Commerce education is that form of instruction which both directly and indirectly prepare the business man for his calling.'' commerce education has emerged as one of the most potential pursuits in the wake of industrialization. Most of the Education Commissions constituted in post independence India to explore higher education have undoubtedly held that the commerce education is primarily meant for providing the students in-depth knowledge of different functional areas of business so as to prepare people required by the community for the purposes of trade, commerce and industry.

Contents of Commerce Education

Commerce offers foundation for many professional careers like Finance, Planning, Accountancy, Tax Practitioners, Banking and Broking etc, besides academics, research, and many more. Persons having flair for accounting, finance, commodities, marketing and trading etc. generally choose Commerce. As a stream of study, Commerce can be studied the Higher Secondary level. This paves the way for higher studies in commerce related subjects. The undergraduate and postgraduate Education in Commerce is offered at University departments and colleges spread all across the country. Specializations are offered at post graduate and at research levels. A number of subjects can be studied under disciplines of Commerce in conjugation like; Accountancy, Economics, Mathematics, Business, Finance, Marketing, etc. Most commerce colleges in India offer the following subjects in their curriculum:

Business Economics: This would cover concepts like the laws of demand and supply, law of returns, elasticity, theory of pricing under different market forms etc.

Financial Accounting: This subject would deal with the preparation of financial statements like - Profit and Loss statements, Balance Sheets and Final accounts of a company, knowledge of Indian and international accounting standards, calculation of depreciation and valuation of shares and goodwill of a company.

Cost Accounting: This would include process, job and contract costing, costing of overheads, standard and variance costing and budgetary control.

Income Tax: This would encompass the nature and basis of charge of income tax, tax planning, tax deduction, incomes not taxable etc.

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Auditing: This would deal with vouching, valuation and verification of transactions, assets and liabilities. It will also include studying the auditing of different organizations like clubs, hospitals and charitable concerns.

Business Finance: This would include in its scope financial analysis as a diagnostic tool, the management of working capital and its components as well as capital structure leverages.

Business Law: This subject would discuss the different laws in India relating to, among others, the Companies Act Marketing: This subject would deal with products, pricing methods, promotion, channels of distribution, logistics etc.

E-Commerce: E-Commerce involves conducting business using modern communication instrument like Internet, Fax, Telephone, E-data interchange-payment, Money transfer system's-Commerce provides multiple benefits to the consumers in the form of availability of goods at lower cost, wider choice and save times. People or Consumer can buy goods with a click of mouse button without moving out of their house or offices. Similarly, online services such as Internet Banking, Tickets includes Airlines, Railway, Bus Bill Payment, Hotel Booking etc. have been tremendous benefit for the customers'-Commerce education has been phenomenal in making a deep impact on higher education. Growth in the Internet over the last few decades has led to great impact on communication and research in the institutes.

Significance of the Study

The education imparted students of commerce intended to equip them with the specialized skills useful in different functional areas of trade, commerce and industry. The Commerce education plays an essential role in today's dynamic business environment. The rapid trend of globalization and technological changes have made difficult for organizations to survive in the competitive world. As a result the importance of Commerce education has been increased many folds. Business executives need to update their skills due to sudden changes in the external environment. Due to the increasingly complex nature of organizations and businesses, there is a need that the business schools impart relevant, current, and cutting edge knowledge to the students. The School of commerce should play pivotal role in equipping our future dynamic managers with the emerging trends of Commerce skills to face the challenges of dynamic business world.

Objectives of the Study

1. To find out the level of Integration of ICT among Commerce Teachers at Madurai District.
2. To find out the significant difference of the mean score of the Integration of ICT among Commerce Teachers in respect to their Gender, Residence and Discipline of Study.

Hypotheses of the Study

1. The level of Integration of ICT among Commerce Teachers at Madurai District is high.
2. There is significant difference of the mean score of the Integration of ICT among Commerce Teachers in respect to their Gender, Residence and Discipline of Study.

Methodology

Sample

The present study the investigator adopted survey method of research with 220 samples selected from fifteen different colleges of education from Madurai district using stratified random sampling technique.

Tool

The ICT integration inventory were prepared by the Investigator

Statistical Technique Used

Both descriptive and inferential statistics were employed for analysis of collected data. The Mean, Standard Deviation and "t" test were used.

Testing of Hypotheses

Hypotheses-1 The level of Integration of ICT among Commerce Teachers at Madurai District is high.

Table 1 Number and Percentage of Sample of Integration of ICT among Commerce Teachers

Variable	Integration of ICT					
	Low		Average		High	
N	N	%	N	%	N	%
220	50	22.7	141	64.1	29	13.1

In the above table No.1 shows that the Level of Integration of ICT among Commerce Teachers at Madurai District is found to be Average, since a huge percentage of the sample (64.1%) falls under the average category (9-14/out of 20).

Hypotheses-2 There is significant difference of the mean score of the Integration of ICT among Commerce Teachers in respect to their Gender, Residence and Discipline of Study.

Table 2 Number (N), Mean (M), Standard Deviation (SD) and 't' Value of Integration of ICT among Commerce Teachers in respect their Gender, Residence and Discipline studied

	Sub-Variables	Category	N	Mean	SD	"t" value	Level of Significance
ICT Integration	Gender	Male	73	12.34	1.89	3.76	S
		Female	147	13.50	2.47		
	Residence	Urban	102	13.03	2.47	0.48	NS
		Rural	118	13.19	2.26		
	Disciplines	Commerce	122	13.20	1.96	0.63	NS
		Science	98	13.00	2.22		

In the above table No. 2 the Integration of ICT among Commerce Teachers a in respect their Gender, there is a significance difference between the male and female. The calculated —t values 3.76 is more than that of the table value (1.96) the null Hypothesis is rejected. The table also shows that the Mean scores of Female trainees are more than the male's Mean scores in terms of their Integration of ICT.

There is no significance in the Integration of ICT among Commerce Teachers in terms of Residence and Discipline studied, hence, the framed null hypothesis is accepted as the calculated table values (Res- 0.48 and .633) are less than the table value (1.96). There is no significant difference between the Rural and Urban, and Commerce and Science teachers on their ICT integration.

Major Findings

1. The level of Integration of ICT among Commerce Teachers at Madurai District is found to be Average.
2. The Male and Female commerce teachers differ in Integration of ICT. Female teachers are significantly higher than the Male teachers on their ICT integration
3. The Rural and Urban B.Ed., trainees do not differ significantly in their Awareness and differ significantly in their Integration on ICT.
4. The Commerce and Science teachers do not differ significantly in their Integration of ICT.

Scope for Further Research

While the research on the barriers to effective use of modern technology in general is undoubtedly important, more focused research on the barriers relating to the use of specific technologies is increasingly necessary. The reasons behind teachers' attitudes and anxieties also craving further research. There is ample opportunity for undertaking research on impediments and barriers and factors conducive specific to individual technologies, such as the internet, file sharing, e-contents or digital video. Such work could help in increasing the use of these technologies in the classroom.

Conclusion

Commerce should plays pivotal role in equipping our future dynamic teachers with the emerging trends of Commerce skills to face the challenges of dynamic business world. Globalization and liberalization of our economy with privatization and technological revolution have posed the most unprecedented challenges before the commerce education. With trade and commerce assuming innovative dimensions in the context of growing international business, the curricula for Commerce faculty should be adapted and restructured to meet the future challenges of the economic, manufacturing and service sectors. The syllabus of commerce education must contain knowledge component skill component of practice component. Placement is the ultimate goal of any business education. To place the students in industries, colleges can arrange campus recruitment & placement. The nations may be made to streamline the use of these technologies in the classroom. Educational policy makers need to think about this matter seriously with a growing emphasis on information, global economy, Higher Education was viewed as increasingly essential for the world's population. Information Technology and Mobile Technology is now forcing education sector to change according to the need of the time. The most emerging dimension of the Business and Commerce education in the 21st century is the need for Business School to use technology and make it integral part of course contents. Education now becomes an industry, there is explosion of technologies and knowledge in all sphere. The quality of Commerce Education has become a major marketing issue in the changing environment. As per specialization, a practical training should be provided to the students. By making relevant and practical oriented Commerce Education, we may impact global competitiveness to our students. As a part of the society the social awareness among Commerce students is the emerging need of present time.

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THE FUNCTIONS OF ICT IN EDUCATION SEGMENT

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Abstract

This article discusses the function of ICT in education. Information and communication technologies (ICT) at present are manipulating every aspect of human life. They are playing salient roles in work places, business, education, and entertainment. Moreover, many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information. Therefore, this review article discusses the roles of ICTs, the promises, limitations and key challenges of integration to education systems. The review concludes that regardless of all the limitations characterizing it, ICT benefits education systems to provide quality education in alignment with constructivism, which is a contemporary paradigm of learning. ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems.

Key Words: *ICT, technology, teaching and learning.*

Introduction

Nowadays the role of Information and Communication Technology (ICT), especially internet in the education sector plays an important role, especially in the process of empowering the technology into the educational activities. Education sector can be the most effective sector to anticipate and eliminate the negative impact of ICT. Technology in another side can be the most effective way to increase the student's knowledge. Being aware of the significant role of ICT (internet) in our life, especially in the educational activities, education authorities should be wise enough in implementing the strategies to empower ICT in supporting the teaching and learning process in the classroom. Information Communication Technologies are the power that has changed many aspects of the lives. The impact of the ICT on each sector of the life across the past two-three decades has been enormous. The way these fields act today is different as compare to their pasts. Across the past twenty years the use of ICT has basically changed all forms of endeavour within business, governance and off-course education! ICT has begun to have a presence but unfortunately we are lacking to achieve desired impact. The education is a socially oriented activity. It plays vital role in building the society. The quality education traditionally is associated with strong teachers having high degrees. Using ICTs in education it moved to more student – centered learning. As world is moving rapidly towards digital information, the role of ICTs in education becoming more and more important and this importance will continue to grow and develop in 21st century. ICT is not just the bloom of the educational activities, but also it will be the secondary option to improve the effective and meaningful educational process.

The Aim and Objectives of ICT Implementation in Education

The followings are the aim and objectives of ICT implementation in education:

i) To implement the principle of life-long learning / education.
ii) To increase a variety of educational services and medium / method.
iii) To promote equal opportunities to obtain education and information.
iv) To develop a system of collecting and disseminating educational information.
v) To promote technology literacy of all citizens, especially for students.

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vi) To develop distance education with national contents.
vii) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.)
viii) To support schools in sharing experience and information with others.

Integration of ICT in Teaching and Learning

The integration of ICT in teaching and learning is not a method; rather it is a medium in which a variety of methods, approaches and pedagogical philosophies may be implemented .This statement shows that the effectiveness of ICT depends on how and why it is applied and integrated. In 1980, Taylor stated that ICT usage is classified to tutor, tool and tutee. Tutorial programmes lead learners step-by-step through a programme such as drill and practice. Using technology as a tool can help other types of problems, for example, technology as a tool is frequently seen in tutorial or explanatory programmes. ICT acts as a tutee where students programme the computers in order to gain more understanding. A number of different ICT tools and applications may be integrated in teaching and learning. Some of these tools and applications may be designed specifically for educational purposes and some others for more general use. The choices of resources, and the way they are used, can be linked to different learning theories which may be invoked to explain or predict learning benefits from the use of ICT. Roblyer and Edwards believe that the use of ICT in education has evolved from two main approaches, namely directed and constructivist instructional methods. The theoretical foundations of directed instruction are based on behaviorist learning theories and information processing theory, which is a branch of cognitive psychology. The theoretical foundations of the constructivist approaches are based on the principles of learning derived from cognitive learning theory.

Implications of ICT-Enhanced Education for Educational Policy and Planning

Attempts to enhance and reform education through ICTs require clear and specific objectives, guidelines and time-bound targets, the mobilization of required resources, and the political commitment at all levels to see the initiative through. Some essential elements of planning for ICT are listed below.

i) A rigorous analysis of the present state of the educational system. ICT-based interventions must take into account current institutional practices and arrangements. Specifically, drivers and barriers to ICT use need to be identified, including those related to curriculum and pedagogy, infrastructure, capacity-building, language and content, and financing.
ii) The specification of educational goals at different education and training levels as well as the different modalities of use of ICTs that can best be employed in pursuit of these goals. This requires of the policymaker an understanding of the potentials of different ICTs when applied in different contexts for different purposes, and an awareness of priority education needs and financial and human resource capacity and constraints within the country or locality, as well as best practices around the world and how these practices can be adapted for specific country requirements. The identification of stakeholders and the harmonizing of efforts across different interest groups.
iii) The piloting of the chosen ICT-based model. Even the best designed models or those that have already been proven to work in other contexts need to be tested on a small scale. Such pilots are essential to identify, and correct, potential glitches in instructional design, implement ability, effectiveness, and the like. The specification of existing sources of financing and the development of strategies for generating financial resources to support ICT use over the long term.

The Benefits of ICT in Education

It is important to know what they are especially if we are to plan and use them effectively.

i) **Individualization of learning:** This means that people learn as individuals and not as a homogenous group. ICTs allow each individual to relate to the medium and its content. ™

ii) **Interactivity:** Interactivity is the way in which a person can relate to the content, go forward and backward in the content, start at any point depending upon prior knowledge instead of always in a sequential way. ™

iii) **Low per unit cost:** Per person, ICTs reduce the cost of education from very high to very low. ™**Distance and climate insensitive:** It does not matter where you are, or how the weather is, you can still access and learn from ICTs. ™

iv) **Can serve multiple teaching functions and diverse audiences:** ICTs, especially the computer and Internet based can be useful in drill and practice; to help diagnose and solve problems, for accessing information and knowledge about various related themes. ™

v) **High speed delivery, wide reach at low cost:** There is instant delivery of information. ™

vi) **Uniform quality:** If content is well produced and is of good quality, the same quality can be delivered to the rich and the poor, the urban and the rural equally and at the same low cost. But ICTs also have weaknesses which we must understand.

vii) ™**High infrastructure and start up costs**: It costs money to build ICT systems and to maintain them. ™

viii) **Tend toward centralized uniform content in economies of scale:** The larger the numbers, the lower the cost. This means that sometimes we try to reach large numbers so we make content common, not taking into account individual differences. ™

ix) **Are not ideally location and problem sensitive:** Address problems in a general way, but cannot, without special effort, solve local and culturally sensitive problems. ™

x) **Problems of reach, access, remain:** Not everyone has equal access; so not everyone benefits equally from the use of ICTs

xi) The influence of ICT, especially internet (open source tool) cannot be ignored in our student's lives. So, the learning activities should be reoriented and reformulated, from the manual source centered to the open source ones. In this case the widely use of internet access has been an unavoidable policy that should be anticipated by schools authorities.

xii) The influence of ICT, especially internet (open source tool) cannot be ignored in our student's lives. So, the learning activities should be reoriented and reformulated, from the manual source centered to the open source ones. In this case the widely use of internet access has been an unavoidable policy that should be anticipated by schools authorities.

xiii) The implementation of ICT in education has not been a priority trend of educational reform and the state paid little attention to it. Therefore, there should be an active participation, initiative and good will of the schools and the government institutions to enhance ICT implementation at school.

xiv) The teachers should be the main motivator and initiator of the ICT implementation at schools. The teachers should be aware of the social change in their teaching activities. They should be the agent of change from the classical method into the modern one. They must also be the part of the global change in learning and teaching modification.

Conclusion

Education has been identified as one of the services which need to be opened up for free flow of trade between countries. India is developing as a knowledge economy and it cannot function without the support of ICT. There is a need to focus on improving four aspects of ICT -access, usage, economic impact and social impact. The study makes the following suggestions for improving and enabling ICT education in rural India: There is a need for public -private partnership for resource mobilization for funding ICT education in rural areas. To formulate policies to promote broad access to skills and competencies for learning and adopting .ICT Provision of broad-based formal education of ICT .To create awareness on ICT Education Give incentives to firms and individuals for encouraging involvement in continuous training in ICT .Government and national education authorities should ensure availability of high quality internet access to schools and educational institutions. Therefore, education policy makers, educators and all

concerned should evaluate and recognize the roles of ICT in education in order to work for the effective functioning of this technology in their education systems.

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INFORMATION AND COMMUNICATION TECHNOLOGY INTEREST AMONG TEACHER EDUCATORS

Sr.M.Amalorpavam

Abstract

Information and Communication Technology (ICT) has influenced all aspects of life. Processing the knowledge of ICT is really the need of the hour. This paper describes the ICT interest among teacher educators. The framework raises important questions of how teachers use technological devices in their teaching learning process in order to understand the concept in a better way. It also emphasizes teachers to integrate technology into the instruction in the 21st century. The aim of the present study is to appraise the interest among teacher educators in Madurai district. The sample of the present study consists of 60 teacher educators. Mean, Standard Deviation and't' test were used for analysis the data. The results indicate that there is no significant difference between teacher educators interest towards ICT differs regarding gender, location and subject.

Introduction

Education is the core concept that creates an interface between the teacher and the taught. In the process of learning the teacher aims at providing knowledge to the taught through various means and methods. The system is called traditional method of learning but the present education system aims at providing the teacher and the learner to be a literate of technology. Technology improves the quality of education by facilitating learning by doing, real time conversation, delayed time conversation, directed instruction, self-learning, problem solving, information seeking and analysis, and critical thinking, as well as the ability to communicate, collaborate and learn. Possessing the knowledge of technology is really the need of the hour. The need of technology knowledge is very much required for teachers in order to carry out the process of teaching and learning smoothly. Teachers demand special attention because they have special needs and interest that must be addressed with respect and ingenuity in order to make them embrace the new technologies placed in the classroom. In order to improve the pedagogy, teachers need training on technology which motivates the students as well as the teachers. Technology has enhanced teachers' professional knowledge, skill and capabilities by extending their subject knowledge, enabling planning and preparation for teaching to be more efficient. A change in teachers permeates to all aspect of growth and advances needed in teaching-learning processes and scientific developments. Teachers' knowledge of technology for teaching and learning, problem solving skills, capacity building and other germane issues relating to education cannot be undervalued. For teachers to be able to cope with these functions of electronic technologies there is the need for the right attitude to be cultivated towards technology as a tool for teaching and learning.

Review of Literature

Denby et al. have conducted research on ICT tools and its support for learning and teaching. Their findings reveal that there is a relationship between students' interest and ICT tools [6]. Their findings also reveal that ICT tools are used to enhance the interest and attitude of the learners. Rashid M. has discussed the various emerging technologies like CDROM, WWW, the Internet, teleconferencing, computers, satellites, interactive video, and email. According to his view, these are the current technologies incorporating into the teaching and learning environment. Jayasimman et al. have discussed electronic learning method as one of the most powerful learning methods. They have found that e-learning method students are very intelligent and very active than traditional students.

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Senthil et al. have discussed the computer-based tool is findings reveal that ICT tools are very useful and effective. His findings also reveal that ICT tools are used to provide the right information at the right time for the right people. In today's rapidly changing globalization scenario and technological developments, radical changes in learning process and strategy is the need of the hour. A classroom with digital visualization and explanations will save the lecturer's time of preparation and effort in communicating the subject matters. The guess-visualization ability of learners differs widely due to their visual perception, background, community, heredity, visual skills, aesthetic ability, creativity, etc. Digital devices basically and primarily act as a lecturer's aid to stimulate the learner's interest. There is a wide variety of audio-visual aids a lecturer can use in the classroom. The chalkboard, PowerPoint, models, projectors, overhead projectors, tablets, short films are some of them. A visual aid has to be wisely chosen to suit the class most appropriately.

Need for the Study

Teachers have always played a crucial role in preparing communities and societies towards exploring new horizons and achieving higher levels of progress and development. Hence effective combination of Educational Technology and teaching skills contribute solutions to the problems of the country by developing desirable understanding of attitudes, skills and abilities of the students. The teachers face innumerable number of challenges in their daily classroom teaching. They are to be equipped with the most relevant research works and progress taking place in the technology of teaching; this also enhances the quality of teaching. This paper describes the interest in Information and communication technologies (ICT) among teacher educators with Focus on Education.

Scope of the Study

The new digital media technologies are instruments for innovation. The digital literacy is modern technology in the field of digital education. The introduction of digital media in education will encourage and motivate the students to explore new areas. In the current situation in India, the computer literacy level among the villagers is in a developing stage, whereas in the United States it is going beyond digital literacy. On 19th May 2011, the USA government has launched a website named www.DigitalLiteracy. gov- to give libraries, community colleges, schools and workforce training centers tools to teach computer and digital literacy skills. The concept of digital literacy is a very new concept and it's in a fast developing stage in India.

Objectives of the Study

The objectives of the study were to find out

1. To find out the significant difference in ICT interest between male and female B.Ed. teacher educators.
2. To find out the significant difference in ICT interest between the teacher educators in urban colleges and those in rural colleges.
3. To find out the significant difference in ICT interest between the arts and science teacher educators.

Hypothesis

1. There is no significant difference in ICT interest between male and female B.Ed. teacher educators.
2. There is no significant difference in ICT interest between the teacher educators in urban colleges and those in rural colleges.
3. There is no significant difference in ICT interest between the arts and science teacher educators.

Method and Procedure

Method: In the present study Descriptive Survey Method of investigation was employed.

Sample: For the purpose of the study a sample of 60 teacher educators was selected in Madurai District through random sampling technique.

Tool: The ICT interest developed by the investigator.

Statistics Used: Mean, SD, t-test were used to analyze the data.

Analysis and Interpretation of the Data

Hypothesis: 1

Table I: Mean, S.D and T-Value Showing the Difference in the Interest of ICT towards Teacher Educators Based on Gender

Gender	N	Mean	SD	't' value	Significant
Male	32	17.75	1.56	0.42	NS
Female	28	17.57	1.72		

From the Table I it is evident that the t-value is 0.42, which is not significant at 0.05 levels. Thus, the null hypothesis that „There is no significant difference between the interest of male and female teacher educators towards ICT" cannot be accepted. Mean ICT interest scores of male and female teacher educators are 17.75 and 17.57 respectively. It means that when compared with male teacher educators female teacher educators have more interest towards ICT.

Hypothesis: 2

Table II: Mean, S.D and T-Value Showing the Difference in the Interest of ICT towards Teacher Educators Based on Location

Location	N	Mean	SD	't' value	Significant
Urban	44	17.56	1.68	0.47	NS
Rural	16	17.93	1.47		

From the Table I it is evident that the t-value is 0.47, which is not significant at 0.05 levels. Thus, the null hypothesis that „There is no significant difference between the interest of urban and rural teacher educators towards ICT" cannot be accepted. Mean ICT interest scores of urban and teacher educators are 17.56 and 17.93 respectively. It means that when compared with rural teacher educators urban teacher educators have more awareness towards ICT.

Hypothesis: 3

Table III: Mean, S.D and T-Value Showing the Difference in the Interest of ICT towards Arts and Science Teacher Educators

Subjects	N	Mean	SD	't' value	Significant
Arts	33	17.78	1.65	0.45	NS
Science	27	17.59	1.61		

From the Table III it is evident that the t-value is 0.45, which is not significant at 0.05 levels. Thus, the null hypothesis that „There is no significant difference between the arts and science teacher educators towards ICT" cannot be accepted. Mean ICT interest score of arts and science teacher educators are 17.78 and 17.59 respectively. It means that as compared to arts teacher educators, science teacher educators have more interest towards ICT.

Major Findings

The following are the findings of the study.

1. There is no significant difference in ICT interest between male and female B.Ed. teacher educators.
2. There is no significant difference in ICT interest between the teacher educators in urban colleges and those in rural colleges.
3. There is no significant difference in ICT interest between the arts and science teacher educators.

Recommendations

Internet connection can be provided to student teachers who can go through many related websites for their teaching learning process. 2. Orientation programme can be conducted to the student teachers to use the technology resources effectively. 3. Workshops can be organized to update the technological knowledge of the student teachers

Conclusion

ICT has undoubtedly become a powerful tool that is breaking the traditional teaching methods of education. ICT incorporated teaching learning process may lead the education system to be more productive and creative. The interest of ICT is necessary in the 21st century teacher educators since the conventional modes of teaching learning will not serve the purpose. There is no doubt that ICT based teaching learning process will enhance the outcome of education.

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ICT USE IN SCHOOL ADMINISTRATION

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Abstract

Information Communication Technology (ICT) plays an important role in enhancing the quality of education. Administration and management applications of ICT are currently popular in schools due to its capabilities in facilitating administration activities from data storage to knowledge management and decision making. In this paper, review of the literatures regarding applications of ICT, types of applications and their effectiveness for administrative activities in schools is presented. Result may light on administrators to improvise and increase the utilization of ICT in daily administrative tasks to make their work more efficient and effective. So, This ICT phenomenon is very essential for each and every school for forthcoming academic season.

Keywords: *Management, quality, literature, effectiveness, administrative, efficient, essential.*

Introduction

In the current information, educational institutions are expected to play a crucial role as the engine for knowledge generation and learning environment for every student. In this regard, information, communication technology (ICT) becomes the vital means to facilitate this task. ICT has become an essential part of our everyday life; accordingly, its integration in education is inevitable and cannot be avoided. This is due to the fact that using ICT in education has become one of the most effective factors in school improvement not only for the purpose of teaching and learning, but also for administrative use. ICT applications in education can be considered as an effective enabler to create access, store, transmit, and manipulate different information inn audio and visual form, due to the capacity of ICT inn providing proactive environment. ICT applications in education may be used for various purposes. It may be used for effective teaching learning processes to achieve quality education and overall development of students or for administrative purpose by teachers, staff and management team. In this paper administration and management mean control and verification of system and the process of organization and managing resources of all kinds in sufficient quantity and quality to ensure that set objectives are reached. Many countries have formulated ICT strategies and policies for their education systems administration and management. This paper reviews the various factors that influences the choice made by the schools administrators as well as the reasons why certain ICT usage are adopted are why some are abandoned. Moreover, the technological revolution is a major challenge for school administration. One of the challenges facing by schools is the lack of ICT applications usage among teachers because of their low level of literacy in ICT knowledge and capability. The purpose of this paper aims to understand the ICT applications usages in school administration and management. More specifically this review set out to address the following objectives.

ICT Applications in Education Administration and Management

In the recent years, ICT applications have been using in education administration and management to support sustainable development. A software based tools and applications are a piece of computer program which execute useful tasks for education, such as word processing, desktop publishing, running a database, creating a presentation or e mail program. There are three main administration groups that applying ICT in their various activities and actions in their daily administration and management job at schools including; Administration head, administration teachers and Administrative staff.

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According to all administration head, school principals should have basic skills of using ICT in school daily administrative and management job. Principals functions as a role of model when computer technology is applied to administrative and managerial task. As an instructional leader, principals facilitate teacher's integration of computers in teaching and learning, as an transformational leaders they encourage creativity, open mindedness and facilitate conditions and events that create a positive environment for technology adoptions. Web noted that instructional leaders directly and indirectly determine the success or failure of teacher competencies in instructional technology. These leaders are also instrumental in integrating technology into the classroom curriculum through the teachers that are employed. Administrators play major role in providing successful learning environments and they should make it possible for their teachers to adopt technology to make a difference.

Administration Teachers

Administration teachers are the teachers who besides their teaching activities also have administration responsibilities. The administration teachers on the front line are the directors and chiefs of all the offices and departments. In Malaysia, administration teachers can be divided to three groups which are curriculum head, student affair head and co-curriculum head. The curriculum head teachers are responsible in handling overall student's record. Teachers under this curriculum head have to maintain all records regarding the pupils by keeping in particular format. This computer files contain pupils cumulative records, formative evaluation and summative evaluation which can be print out from the software application for hardcopy documentation. However, the most commonly reported use of ICT for teaching is preparation for notes, teaching learning resources and examination.

Administrative Staff

ICT applications also can be use be administrative staff for doing their daily responsibilities faster and more accurate. Administrative staff uses different type of tools to handle financial work, maintain communication, and keep records, process document and to collect data. By using ICT applications they can handle these responsibilities more effective and efficient. Besides, using ICT applications would help them in recording school financial documents such as balance sheet, pay slip, audit reports, non-salary grants, and stocks keeping as well as student evaluation report and overall student records for future reference.

ICT Application Tools in Education Administration and Management

There are lots of ICT application tools that have been vastly using in education administration and management. Available ICT application for education administrative purposes are internet, website, software and hardware's such as printers, scanners, photocopy machines and computer. The details information of ICT tools that been widely used in education administration and management are as follow.

Internet Based and Web Based Tools

In the last two decades, the internet and ICT application tools have been expanded into the field of education all over the world. This is due to capability of internet to provide opportunities for introducing advanced teaching learning methods. The advanced and modern methods of learning are able to prepare students as skilled workforce for future.

Hardware Applications

Each year computers and other information technology and communication hardware evolve. New machines and new equipment create new opportunities especially in education administration to make management process easier, faster, and cheaper. In this context, we can see there are some common ICT application tools that have equipped schools administration and management such as computers, photocopy machines, TVs, radio digital cameras, scanners, DVD players, Laptops, multimedia projector, and overhead projectors.

Software Applications

Schools administration and management tend to use various software applications in their administration job purposes. The most frequently used applications by school administration and management were office tools such as Microsoft office (word, excel, Power point), and tally. Administrators are familiar with range of software what handles information, particularly spread sheets and databases. Although this will be time consuming, databases potentially offer much more efficient and effective ways to manage information that most schools currently use. There are a lot more software applications that have been used by schools administration and management, for example, the most famous application in school is EMIS. EMIS, which is an abbreviation for "Education Management information system", is a sub system of an education system whose aim is to collect, store, process, analyses and disseminate information.

School Information Management System

SIMS (School information management system) is a student information system, i.e. a school management information system, currently developed by Capita. It is the most widely used MIS in UK schools, claiming over 80% market share across the primary and secondary sectors.

A learning management system (LMS) is a software application or web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. The Advanced Distance Learning group, sponsored by the United States Department of Defense, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardization of learning management systems.

Role of School Authorities in Enhancing the Internet Facility

Nowadays the role of internet in the education sector plays an important role in integrating the technology into the educational activities. Online education has revolutionized the education system. Scholl authorities (i.e., mean schoo1 headmaster, school founders) should be wise enough in implementing the strategies to enhance to power of internet.

Conclusion

Based on the above mentioned points, everyone should be equipped with knowledge and skills related to ICT. In this regard, ICT literacy is essential to be considered by the authorities especially in education field. School administration and management should consider the fact that application of ICT in education can contribute to achieve universal education worldwide. For that reason, effective strategic planning for use of ICT application for administration and management that facilitate opportunities for all students, teachers and staff is essential.

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ICT VS DIGITAL INDIA

Dr. A. Mary Delphine

Introduction

E-governance initiatives in India took a broader dimension in the mid 1990s for wider sectoral applications with emphasis on citizen-centric services. The major ICT initiatives of the Government included, inter alia, some major projects such as railway computerization, land record computerization, etc. which focused mainly on the development of information systems. Later on, many states started ambitious individual e-governance projects aimed at providing electronic services to citizens. This paper deals with ICT Vs Digital India. The 'Digital India' programme is envisioned to transform India into a digitally empowered society and a knowledge economy. The Programme symbolizes the Government of India's vision for connecting and empowering 125 crore citizens; creating unprecedented levels of transparency and accountability in governance; and leveraging technology for quality education, health care, farming, financial inclusion and empowering citizens. Under the 'Digital India' Programme, technology will play a central role to achieve easy, effective and economical governance. The 'Digital India' Programme was presented to the Union Cabinet on 20th August, 2014 and was formally launched by Honble Prime Minister on 1st July, 2015. The programme is centered around three key areas, namely, Digital Infrastructure to every citizen, Digital services & governance on demand and Digital empowerment of citizens.

Several Initiatives Envisioned under the Programme Have Been Implemented and Many are Under Implementation. Some Prominent Achievements of Digital India Are

1. **MyGov Platform –** This unique platform for citizen engagement in governance has been implemented as a medium for citizens to exchange ideas/ suggestions with the Government. Through this platform, the Government of India gets feedback, inputs, advice and ideas from citizens for policy decisions, new initiatives like Digital India, Swachch Bharat, Clean Ganga, Make in India, Skill Development, etc. MyGov is growing steadily, with over 15.8 lakh users already registered, and over XX million page views. MyGov has conducted over 750 activities and is receiving more than ten thousand (10,000) posts per week on various issues. MyGov has also played a key role in reaching out to citizens for the Smart Cities Mission and has facilitated consultations up to the Gram Panchayat and Municipalities levels for the design of the New Education Policy.
2. **Jeevan Pramaan –** Pensioners can now conveniently submit their life certificates online through this portal. The certificates are stored in the Life Certificate Repository for making it available anytime & anywhere for pensioners and the Pension Disbursing Agencies. Over eight (8) lakh pensioners are already registered on this portal.
3. **E-Greetings Portal –** is being used to send e-Greetings by Government departments on various occasions like Gandhi Jayanti, Diwali, Teacher day, Independence day, etc. Over 10 lakh e-Greetings have been sent through this portal. Over 42 greeting categories and 450 cards are available on the portal to send greetings in electronic form. Interestingly, all the greetings have been created by crowd sourcing inputs through MyGov contests, allowing India's creative talent to bloom. It also serves as an eco friendly method of sharing joy and good wishes with friends and family.
4. **EBooks Platform (eBasta) –** is an electronic platform of e-Books for schools. Currently, 501 e-Contents and 15 eBasta (collection of books) are available on this platform.
5. **Digital Locker System –** ensures that citizens are not asked to provide documents/certificates, which are already available with some department/institution of the government. Currently, over ten (10) Lakh digital lockers have been opened where citizens have self-uploaded over 11.8 lakh documents and 52.09 lakh documents have been issued. Government Departments are being assisted to onboard/integrate them with the Digital Locker.

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6. **E-Sign –** would facilitate digitally signing a document through online authentication mechanism. So far, 1.75 lakh e-Signatures have been issued. E-Mudhra and CDAC are empanelled to offer e-Sign services.
7. **e-Hospital –** aims to reduce the anxiety of patients and their attendees by making available various online services such as appointment, accessing diagnostic reports, payment of fees and enquiring blood availability, etc. e-Hospital is currently functional in four (4) Central Government hospitals namely AIIMS, Dr. RML Hospital, Safdarjung & NIMHANS hospitals, and being implemented in 11 major Central Government hospitals.
8. **National Scholarships Portal –** provides a centralized platform for application, approval and disbursement of scholarships to students under any scholarship scheme. Over 67 lakh applications have been submitted on this portal for 19 registered scholarship schemes of 7 Ministries / Departments. The goal is to bring all scholarship schemes under this portal.
9. **Digitize India Platform –** allows government organizations in the country to digitize its records and documents through contributions of ordinary citizens. So far, through over 14,088 contributors; 2.6 lakhs documents & 24.1 Lakh snippets have been utilized for digitization.
10. **Approval of new Mission Mode Projects –** Thirteen new Mission Mode Projects (MMPs) have been approved to offer citizens a wider range of electronic services. These MMPs include Financial Inclusion, Rural Development, Social Benefits, e-Sansad, e-Vidhaan, Agriculture 2.0, Roads & Highways Information System (RAHI), Central Armed Para Military Forces (CAPF), Women & Child Development, and National Mission on Education through ICT (NMEICT), National GIS (NGIS), e-Bhasha and Urban Governance.
11. **Policies/Schemes announced –** Several policies related to Software development, Electronic services and promotion of Electronic Manufacturing have been announced that include – Policy & Framework on adoption of Open Source Software for GoI Policy on Open APIs for GoI Policy on collaborative application development by opening source code of Govt. applications Application development and re-engineering guidelines for cloud-ready applications
12. **Electronics Development Fund** – It has been created and is being housed with M/s Canbank Venture Capital Fund Ltd to support venture capital funds which will in turn fund start ups.
13. **Electronic Manufacturing Cluster Scheme** – To support creation of world-class infrastructure, in-principle approval to 18 clusters and final approvals to 5 clusters have been accorded.
14. **Visvesvaraya PhD Scheme** for Electronics and IT – So far, 1436 PhDs in addition to 11 Young Faculty Research Fellowships have been supported, with the motive of promoting R&D and innovation in Electronics and IT. Policy & Framework on adoption of Open Source Software for GoI Policy on Open APIs for GoI Policy on collaborative application development by opening source code of Govt. applications Application development and re-engineering guidelines for cloud-ready applications
15. **Electronics Development Fund** – It has been created and is being housed with M/s Canbank Venture Capital Fund Ltd to support venture capital funds which will in turn fund start ups.
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Rural BPO Scheme

To facilitate ICT enabled employment generation throughout the country, BPOs would be set up in the north-eastern states under North East BPO Promotion Scheme (around 5000 seats) and in Tier II and Tier III cities of the country under the India BPO Promotion Scheme (over 48,000 seats). The India BPO Promotion Scheme will create an employment opportunity for about 1,45,000 persons. In

the Expression of Interest issued, 78 companies have shown interest for 1,25,000 seats in 190 locations of the country.

Common Service Centres

In the last 18 months, CSCs operating as front end service delivery outlet in rural areas has increased from 1.34 lacs to 1.44 lacs. The total transacting CSCs increased from 63433 to 94455 providing e-gov services to the citizens. CSCs acting as Banking Correspondents increased from 11244 to 27652, which are making around 1.36 crores transactions in a month, through which, in the last 6 months, CSCs have earned a commission of Rs 23 crores. CSCs are also working with 15 Insurance companies, doing a premium collection of Rs 70 lakhs per day. My wish is to see CSCs being run by digitally literate Mahadalit women, delivering the e-gov services. Recently, we could make 300 Mahadalit women of Gaya district of Bihar, digitally literate to deliver e-gov services through CSCs in the rural areas.

National Digital Literacy Mission

Aims to provide IT training to enable the citizens to use IT and related applications for their livelihood earning and employability has been approved. The Scheme was launched by Hon'ble Prime Minister at Ranchi, Jharkhand on 21st August, 2014.

DISHA (Digital Saksharta Abhiyan)

Has objective to make additional 42.5 lakh persons digitally literate in a period of four years. Under the Disha and National Digital Literacy Mission, 12.25 lakh persons have been trained and 4.75 lakh candidates have been certified (by NIELIT).

Upsurge in Make-in-India in Electronics

So far, under the Modified Special Incentive Package Scheme (M-SIPS), DeitY has received 156 proposals with investment of over Rs. 1 lakh 13 thousand crores. Many major well known brands have submitted their applications under this scheme, to avail the benefits. This policy has been made more investor friendly and extended for five years up to July 2020.

Revamping of Existing Mission Mode Projects (MMPs)

Some of the existing MMPs were developed many years ago. Their software applications are being assessed and revamped by leveraging new technology platforms, such as Cloud, Mobile, GIS, etc., to facilitate delivery of integrated services involving multiple departments, and enhance the quality of services that can efficiently cater to the needs of citizens.

Conclusion

ICT is a boon for teaching. It is also a stress reducer. It is ICT that gives the name Digital to any area intervened. Since now it has come to browse the government policies of our country, it is a co partner in giving a new face to the field that it is linked with. It has been the endeavor of this government to empower the citizens of this country in a way unlike ever before. We are fortunate that the advances in digital technology, much of which is being led by Indians, has given us the space and platform to achieve this.

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AN EFFECTIVE USE OF ICT IN SCHOOLS

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Abstract

Information and Communication (ICT) have become common place entities in all aspects of life. Across the past twenty years use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business and governance. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centred learning settings. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century. In this paper, review regarding the use of ICTs in education was provided. Effective use of ICT for Education along with ICT use in the teaching learning process; quality and accessibility of education, learning motivation, learning environment.

Introduction

ICT stands for "Information and Communication Technology". It refers to technologies that provide access to information through tele communications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, Wireless Network, cell phones and other communication mediums. Law (2003) state that near the end of the 1980s, the term 'computers' was replaced by 'IT' (Information technology) signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term 'ICT' around 1992, when e-mail started to become available to the general public. Information And Communication Technologies have become within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing, and numeracy. However, there appears to be a misconception that ICTs generally refers to 'Computers and Computing Related Activities'. Information and Communication Technology (ICT) is diverse set of technological tools and resources used to communicate and to create disseminate, store and manage information. ICT has become part of everyday life and all sectors from banking to tourism now depend heavily on ICT for carrying out their transactions. The National Curriculum frame work 2005 (NCF 2005) has highlighted the importance of ICT in school education.

Meaning of ICTs

ICT refers to all equipment, application and services that involve communication. Computers, cell phones, televisions, radios and satellite systems are all part of ICT. The ever-changing field of technology has made the world a small place, as information is easily and rapidly exchanged through devices of tele-communication. The Internet has proved a huge advancement in the ICT community. Video conferencing and distance learning allow people thousands of miles apart to speak together as if they were in the same room. ICT involves more than just sharing of information, however. It also includes the quest to improve communication throughout the world, especially to more underserved areas of the globe. In the past few decades ICT have provided society with a vast array of new communication capabilities. For example, People can communicate in real time with others indifferent countries using technologies such as instant messaging, voice over IP(VOIP), and video-conferencing social networking websites like face book allow users from all over the world to remain in contact and communicate on a regular basis.

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Modern ICT have created a "Global Village" in which people to communicate with others across the world as if they were living next door. For this reason ICT is often studied in the context of how modern communication technologies affect society.

The Effective Use of ICT in Schools

The shift is necessary because this is the age of information and technology, an age that requires that teachers facilitate the gathering of this information and not merely teach. Unfortunately, in India, ICT is largely associated with the use of computer and internet. What one uses ICT for and how one uses it, is not addressed sufficiently. Schools and colleges acquire computers, Internet connections, LCD Projectors and then send their teachers for crash courses that supposedly teach them to use technology. The trouble is this whole approach is devoid of focus. But until teachers are made to realize the need of ICT, no amount of computerization can help. 'Students also have ideas of their own knowledge that they gathered from daily life. This knowledge and ideas are not accepted or utilized by teachers. Using ICT this can be achieved in a big way'. Training a teacher in using ICT is more crucial than acquiring a large number of computers. Teachers have to be trained to facilitate the learning process, make the process real, achievable, challenging, yet exciting and not intimidating. Reducing teacher talk and encouraging student discussion is extremely important. Everything need not be written on the black board to be considered as taught many teachers think the computer is used only to make the content look attractive! They need to know that in 21st century, information is not different access, become essential skills. ICT provides meaningful, absorbing media that makes teaching-learning more productive.

ICT- Enhancing Teaching and Learning Process

The field of education has been affected by ICTs, which have undoubtedly affected teaching, learning and research. ICTs have the potential to accelerate, enrich and deepen skills, to motivate and encourage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change. In a rapidly changing world basic education is essential for an individual be able to access and apply information such ability must include ICTs in the global village.

The Use of ICTs in Teaching and Learning Process

The Indian Education System [Compulsory and secondary] is undergoing a massive technological transformation process.

- Broadband Networks are being deployed in schools all over the country.
- Computers and whiteboards are being installed in the classrooms.
- Laptops and Internet connections are being sold to students and teachers at below the market prices.
- However, the integration of ICTs in compulsory and secondary education curriculum is progressing very slowly.
- A clear-cut strategy [of integration ICTs in education] also seems to be lacking.

Main Areas of Teaching Process

There are two main areas that we have to look at it a paradigm shift in the teaching process has to occur. The teacher's role of teaching and the teacher's role of helping the student learn. In the first one the teacher has to enhance teaching. Here, the teacher can ask himself or herself. 'How will ICT enhance my teaching?' The teacher should be aware of what lacunae exist in his/her teaching. The teacher should ask 'Do I need to be empowered?' 'What more can be done?' 'What is the most effective way of teaching?' 'How will more students benefit from my teaching?' 'Will ICT help me?' The second role of the teacher helping the student learns. The internet is full of information, textbooks are bursting with information. But this information can become true knowledge only, when the teacher makes it meaningful. Here the

teacher can use multimedia to make topics more comprehensible. Think of a teacher showing large number of different flowers while reading out a poem on flowers (or) teaching about the part of a flower.

An Overview of Teacher Managerial Function in the Classroom

Historically, most of teachers restricted their role to teaching. The different government organizations and departments provided a guideline for the role and responsibility of the teacher. The teacher plays multiple roles in the school. The critical managerial functions of a teacher in elementary education are similar to those in other sector. These are,

i. Administration

Administration refers to the direction, control management and organization of human and material resources for educational growth and development.

ii. Personal Management

Planning and managing human resources is personal management. It includes recruitment, transfer and redeployment; Promotional opportunities and performance appraisal systems, grievance redressed mechanisms and professional development issues

iii. Planning

Planning is a systematic exercise of determining a future course of action in accordance with identified objectives, needs, priorities and existing/likely capacities, within a given time frame, reflecting cost-effective choices.

iv. Financial Management

Financial management refers to mobilization, deployment and effective use of financial resources as per stated objectives and strategies.

v. Supervision, Monitoring and Support

Monitoring and facilitation of teaching-learning process and other school development activities, for enhancing their quality through suitable tools, methods and mechanisms. The focus is on school, because this is the unit where primary learning takes place, and any effort to improve the quality of process should ultimately be reflected here.

vi. Information Management and Communication

Management of information as an institutional resource is "Information Management". It includes aspects of collection, processing, dissemination and use of information. "Communication refers to the process of exchange of information and feedback.

Teacher Education through ICTs

ICTs can support effective professional development of teachers. Using ICTs as tools for training of teachers is as important as introducing the basics of ICTs to the prospective teachers. As sources of information and expertise, as well as tools for distance communication, ICTs can offer many new possibilities for teacher education. Teachers may learn new forms of communication through the regular use of these technologies. Use of new media, new rules of communication-even a new language-have to be learned.

Conclusion

Emergence of information and communication technology has ushered a new era in our civilization in which digitalization has almost become a better alternative, because it has influenced. Every facet of human life include education. Transformation should take place in the way our teachers teach and students learn. The efforts of ICT are generally of sporadic nature in the education program. Teachers in India need to be prepared to face the challenges of 21-st century for imparting the new age education; Hence education program in India should integrate ICT component in such a way that teachers are enabled to face the new demands in their profession. Efforts must be made by the educationist to

change the process of teaching-learning in order to prepare the students to adjust themselves to the society; this could definitely create a new learning environment and information rich society.

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INTEGRATION OF ICT IN TEACHING AND LEARNING

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Abstract

Student learning is the focus of teaching learning process. Theorists and practitioners have always been made concerted efforts to facilitate students learning by enhancing the quality of learning experiences. Applications of predominant learning theories have always been changing modifying the methods of teaching and learning. Some researches indicate that children retain 20% of what they hear, 40% of what they see and hear, and 75% of what they see and do. That's one of the key reasons why the latest educational technology has become essential to impart education. They combine the use of several ICT's- internet, video, audio, graphics, text, Images etc. In this paper efforts have been made to analyze the present situations in order to Integration of ICT in teaching and learning in mainstream education as well as special education too.

Introduction

The process of teaching and learning and creation of knowledge is carried on from the very first day of human history. As the body of knowledge grew bigger and bigger with varied dimensions the process of teaching and learning became formal and systematic. Need for methods and strategies to enhance the quality of learning originated. Over centuries educators have been concerned with the issue of increasing the efficiency of learning experience. The effective integration of ICT's into the educational system is a complex, multifaceted process that involves not just technology –indeed, given enough initial capital getting the technology is the easiest part-but also curriculum and pedagogy, institutional readiness, teacher competencies, and long term financing, among others.

Background

What are ICTs and what types of ICTs are commonly used in Education?

ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. In recent years there has been a groundswell of interest in how computers and the Internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings. But ICTs are more than just these technologies; older technologies such as the telephone, radio and television, although now given less attention, have a longer and richer history as instructional tools. For instance, radio and television have for over forty years been used for open and distance learning, although print remains the cheapest, most accessible and therefore most dominant delivery mechanism in both developed and developing countries. The use of computers and the Internet is still in its infancy in developing countries, if these are used at all, due to limited infrastructure and the attendant high costs of access. Moreover, different technologies are typically used in combination rather than as the sole delivery mechanism. For instance, the Kothmale Community Radio Internet uses both radio broadcasts and computer and Internet technologies to facilitate the sharing of information and provide educational opportunities in a rural community in Sri Lanka. The Open University of the United Kingdom (UKOU), established in 1969 as the first educational institution in the world wholly dedicated to open and distance learning, still relies heavily on print-based materials supplemented by radio, television and, in recent years, online programming.8 Similarly, the Indira Gandhi National Open University in India combines the use of print, recorded audio and video, broadcast radio and television, and audio conferencing

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For Pupils with Physical and Sensory Disabilities, ICT Can be Used to

provide switch access to classroom activities such as matching, sorting and word processing translate text into speech and speech into text prepare work which is specially adapted with large fonts, symbols and particular colors This will give pupils some level of independence in partaking in activities and the ability to work in an environment that encourages play and investigation.

For Pupils with Learning Difficulties, Using ICT can

Provide pupils with a clutter-free working environment where features of programs are linked to pupils' ability enhance the development of activities which are clear, focused and attractive to pupils enable pupils to practice skills in a different context, allowing numerous repetitions in order to aid learning support language development activities and offer multi-sensory ways of learning offer a medium for differentiated activities

For Pupils with Emotional and Behavioral Difficulties, using ICT can

offer pupils a non-threatening or non-judgmental situation allow pupils to be motivated and offer opportunities for success give pupils the opportunity to be responsible for their own learning allow pupils to work on tasks that are more manageable and achievable

Impact of ICT in Learners

ICT has very strong effect in education and it provides enormous tools for enhancing teaching and learning. There have been many studies that have highlighted the various ways that ICT may support teaching and learning processes in a range of disciplinary fields such as the construction of new opportunities for interaction between students and knowledge and accessing information. ICT enable new ways teaching and learning when used appropriately under right conditions such as suitable resources, training and support. ICT also offers the potential to meet the learning needs of individual students, to promote equal opportunity, to offer learning material, and also promote interdependence of learning among learners (Leach, Ahmed, Makalima & Power, 2005).

The five ways to establish and sustain effective learning environments through ICT suggested by the Committee on Developments in the Science of Learning (2000) are:

1. Real world problems
2. Scaffolding
3. Feedback, reflection and guidance
4. Local and global communities
5. Extending teacher learning.

Impact of ICT in Teachers

Roblyer and Edwards (2000) suggested that there are five important reasons for teachers to use technology in education:

1. Motivation;
2. Distinctive instructional abilities;
3. Higher productivity of teachers;
4. Essential skills for the Information Age and
5. Support for new teaching techniques (Samak, 2006).

In order to make use of technology in the classroom effectively, educators should have a positive attitude toward technology and they should be trained in using the modern technologies in their respective field of education. Chin and Hortin (1994) stated that teachers must act as the "change agent" in the relationship between technology and the students as teachers are more likely to implement the recommended and proposed changes concerning ICT in education.

But at the same time there are many challenges faced by educators as they consider how best to best incorporate ICT tools into their teaching. This is being discussed in the following article.

What is e-learning?

Although most commonly associated with higher education and corporate training, e-learning encompasses learning at all levels, both formal and non-formal, that uses an information network—the Internet, an intranet (LAN) or extranet (WAN)—whether wholly or in part, for course delivery, interaction and/or facilitation. Others prefer the term online learning. Web-based learning is a subset of e-learning and refers to learning using an Internet browser (such as Netscape or Internet Explorer).

What is blended learning?

Another term that is gaining currency is blended learning. This refers to learning models that combine traditional classroom practice with e-learning solutions. For example, students in a traditional class can be assigned both print-based and online materials, have online mentoring sessions with their teacher through chat, and are subscribed to a class email list. Or a Web-based training course can be enhanced by periodic face-to-face instruction. "Blending" was prompted by the recognition that not all learning is best achieved in an electronically-mediated environment, particularly one that dispenses with a live instructor altogether. Instead, consideration must be given to the subject matter, the learning objectives and outcomes, the characteristics of the learners, and the learning context in order to arrive at the optimum mix of instructional and delivery methods.

Conclusion

This is the age of technology. Every one seems to have something to do with computers and communications. Our future generation is already showing signs of becoming totally computer and technology dependent. It is a fact that over the years, education has become increasingly complex, with more and more information communicated to the student. In this environment it is important for students to have an interesting, interactive and experimental mode of instruction that will make learning enjoyable and easy.ICT based education is definitely the direction towards which the whole world is progressing. The scope of this study, given the multitude of manifestations of special education needs was to examine the most representative studies over the last decade which exploiting ICT, contribute to independent pupil learning and curriculum. The result of the current study are encouraging and there is a general consensus that ICT's do play a significant role in both ensuring and enhancing learning and life skills programs of students with special educational needs.

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"INTERNET ADDICTION AMONG B.ED STUDENTS IN MADURAI DISTRICTS"

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Abstract

This study aimed to examine internet addiction in a sample of B.Ed students in Thiagarajar College of Preceptors, Madurai District. Based on Internet Addiction Questionnaire constructed and standardized by Kimberly Young, (2008) the IAT, this 20 item questionnaire measures mild, moderate, and severe levels of Internet Addiction was used in the present study. The researcher used normative survey methodology in which a questionnaire was distributed to 1000 B.Ed students with their consent. Internet addiction is described as an impulse control disorder, which does not involve use of an intoxicating drug and is very similar to pathological gambling. Some Internet users may develop an emotional attachment to on-line friends and activities they create on their computer screens. Internet users may enjoy aspects of the Internet that allow them to meet, socialize, and exchange ideas through the use of chat rooms, social networking websites, or "virtual communities." Other Internet users spend endless hours researching topics of interest Online or "blogging". Blogging is a contraction of the term "Web log", in which an individual will post commentaries and keep regular chronicle of events. It can be viewed as journaling and the entries are primarily textual. Similar to other addictions, those suffering from Internet addiction use the virtual fantasy world to connect with real people through the Internet, as a substitution for real-life human connection, which they are unable to achieve normally. The study indicated a limited internet addiction in a sample of B.Ed students in Thiagarajar College of Preceptors, Madurai District

Key Words: *Internet, addiction, B.Ed students, youth*

Introduction

The internet can provide access to some valuable tools, interesting stories, exciting games and informative content but, when used in excess, the internet has the ability to interfere with work, life, relationships, and daily routines. Internet addiction disorder is a potentially dangerous condition that affects individuals who spend large amounts of time online socializing with friends, playing games, gambling or just surfing the web despite the negative consequences that result from spending so much time online. Internet addiction is a growing epidemic characterized by a compulsive desire to interact online through internet gaming, gambling, cybersex, social networking or compulsive surfing of the web. According to Dr. Kimberly Young, the first psychologist to document internet addiction, these disorders are similar to impulse-control disorders.

Need for the Study

Given the rapidly increasing use of the Internet throughout college student daily activities, it is important to learn more about who is at risk for problem use and possible dependence on this increasingly popular activity. Since schools can adopt new policies, control dorm Internet use, and make changes that affect incoming students, it is important to have a thorough understanding of the risk factors during this formative time in their development as young adults. Moreover, colleges have a responsibility to take care of their students and maintain a healthy student body while they are away from home, thus giving them a vested interest in problem Internet use research.

Background of the Study

Internet addiction is described as an impulse control disorder, which does not involve use of an intoxicating drug and is very similar to pathological gambling.

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Some Internet users may develop an emotional attachment to on-line friends and activities they create on their computer screens. Internet users may enjoy aspects of the Internet that allow them to meet, socialize, and exchange ideas through the use of chat rooms, social networking websites, or "virtual communities." Other Internet users spend endless hours researching topics of interest Online or "blogging". Blogging is a contraction of the term "Web log", in which an individual will post commentaries and keep regular chronicle of events. It can be viewed as journaling and the entries are primarily textual. Similar to other addictions, those suffering from Internet addiction use the virtual fantasy world to connect with real people through the Internet, as a substitution for real-life human connection, which they are unable to achieve normally. However, according to Wong (2010), internet addiction is already a crisis in many developed countries. Investigator believed this plague has infected youngsters in India and situation will be worsening by the day. Hence the Investigator thought of conduct of the present study entitled "Internet Addiction among B.Ed students in Madurai District".

Statement of the Problem

Internet Addiction among B.Ed Students in Madurai District

B.Ed., Students

This refers to the students studying B.Ed., in the colleges of education.

Madurai District

Madurai district is second largest in population of the 32 districts of the state of Tamil Nadu, in southeastern India. The city of Madurai serves as the district headquarters. It houses the world famous Sri Meenakshi Sundareshwarar temple and is situated on the banks of the river Vaigai.

Objective of the Study

To find out the level of exposure to Internet addiction among B.Ed students with respect to background variables in terms of Gender, Locality, Medium

Hypothesis of the Study

1. There is no significant difference between male and female of B.Ed students in their level of internet addiction.
2. There is no significant difference between rural and urban of B.Ed students in their level of internet addiction.
3. There is no significant difference between Tamil medium and English medium of B.Ed students in their level of internet addiction.

Method Used for the Present Study

The investigator has adopted survey method of research to impact of Internet addiction among B.Ed students in Madurai district. Survey research is a procedure in which information is systematically collected from a population through some form of direct solicitation such as face- to face interview, administering questionnaire or schedule.

Population

Population is any group of individuals that have one or more characteristics in common that are of interest to the researcher. The total number of items, selected for conducting a research. In the present study the investigator has selected the B.Ed students in Thiagarajar College of Preceptors, Madurai.

Sample for the Study

The sample is a small proportion of a population selected for observation and analysis. John. E. Conklin defines, "A sample is a representative group of people chosen from a large population". The investigator has used random sampling technique was used for selecting the sample from the population. The sample size is 100 B.Ed students from Thiagarajar College of preceptor in Madurai district.

Tools Used for the Present Study

In this section is dealt with the details of the tool used by the investigator for collecting the required data from the college students. The instrument used in the current study was 'Internet Addiction Questionnaire'. Internet Addiction Questionnaire constructed and standardized by Kimberly Young,

(2008) the IAT, this 20 item questionnaire measures mild, moderate, and severe levels of Internet Addiction was used in the present study. General Information Sheet structured by the investigator.

A weightage of 2, 1, 0 was given to the alternative responses representing high, average and no addiction respectively for an item. The score range between 0 and 40. Total the numbers for each response to obtain a final score. The higher your score, the greater your level of addiction and the problems your Internet usage causes.

Validity and Reliability

It is reported in the manual of pertaining to the tool that he corrected split-half reliability coefficient of adjustment inventory is found to be 0.83. the Test-retest reliability coefficient was computed as 0.78. Content validity and Criterion validity were established by the tool developer.

Data Analysis

Statistical techniques are necessary for understanding of the general trends and group characteristics from a variety of individual characters. The investigator has used following statistical techniques for analysis of data. Mean, Standard deviation, 't' test, ANOVA, Pearson's Product Moment Correlation

Analysis and Interpretation

Null Hypothesis

There is no significant difference internet addiction among B.Ed students with respect to background variable in term of, Gender, Locality and Medium.

Table 1 Significant Difference Internet Addiction among B.Ed Students with Respect to Background Variable in Term of, Gender, Locality and Medium

Background variable		N	Mean	SD	Calculated 't' value	Table value	Remarks at 5% level
Gender	Male	21	21.62	9.55	3.06	1.96	**S**
	Female	79	27.94	8.06			
Locality	Rural	44	23.84	10.23	2.91	1.96	**S**
	Urban	56	28.79	6.68			
Medium	Tamil	43	24.21	9.47	2.44	1.96	**S**
	English	57	28.42	7.74			

It is inferred from the above table that the calculated't' value 3.06 which is greater than table value 1.96 at 5% level of significance. Hence null hypothesis is reject. Thus, the result is that there is significant difference between male and female of B.Ed students in their level of internet addiction. The mean of male students is (M=21.62) and female students is (M=27.94). So female students are better than male students in their level of internet addiction It is inferred from the above table that the calculated 't' value 2.91 which is greater than table value 1.96 at 5% level of significance. Hence null hypothesis is rejected. Thus, the result is that there is significant difference between rural and urban of B.Ed students in their level of internet addiction. The mean of rural students is (M=23.84) and a female student is (M=28.79). So urban students are better than rural students in their level of internet addiction It is inferred from the above table that the calculated't' value 2.88 which is greater than table value 1.96 at 5% level of significance. Hence null hypothesis is rejected. Thus, the result is that there is significant difference between Tami medium and English medium of B.Ed students in their level of internet addiction. The mean of Tamil medium students is(M=24.21) and English medium students are (M=28.42). So English medium students are better than Tamil medium students in their level of internet addiction.

Interpretations

The't' test reveals that so female students are better than male students in their level of internet addiction. This may be due to the fact basically the Girls are having more interest and time

to use internet and hear songs, so the female students are better than male students in level of internet addiction chatting, calling, sharing links, liking links etc., Females use social media less than men for business reasons, whereas female use social media to share more personal information than me, revealing more about their personal lives. Female are more vocal, expressive and willing to share. In other words, female are biologically wired for social networking. The't' test reveals that So urban students are better than rural students in their level of internet addiction Urban students parents given more opportunities in using new technologies than rural students. Rural students don't have adequate internet in their locality. There is need to establish more commercial cyber cafes, community information centre town and information kiosks villages to overcome this problem. The't' test reveals that the English medium students are better than Tamil medium students in using level of internet addiction This may be due to the fact that parents of English medium are educated and sophisticated. The English medium students easy to buy and utilizing internet and computer. For example enable users to create and share content or to participate in social networking. Level of internet addictions a phrase that we throw around a lot these days, often to describe what we post on sites and apps like Facebook, Twitter, Instagram, Snapchat and others. Students are using level of internet addiction because the Level of internet addiction promotes unethical pictures, video clips and images. Level of internet addiction is becoming a hobby of youth.

Recommendations

1. Limit Internet access to public areas at least for certain times of the day and avoid having televisions and computer games in bedrooms.
2. Plan screen time, whether television or Internet use. For television, that's easy in the era of DVRs. Sit and watches a show you like then stop watching. For the Internet, this is more free-flowing, use an egg timer. Do the same for video games.
3. Stress to children that they shouldn't put anything on the Internet that they wouldn't want on the home page of Google, YouTube, ESPN, StLtoday.com, etc. (Nothing on the Internet is truly private.)
4. During exam times or other times when kids need to avoid screen time, delete games or programs or install passwords so the temptation isn't there. Reinstall/remove passwords when exams or a report are complete.
5. Limiting Your Computer Time, Admit you are at risk of an addiction. Set aside limited time for computer use. Cell people instead of sending instant messages or texts.

Suggestions for Further Study

1. A study on impact of level of internet addiction among B.Ed. students may be done and verified with this study.
2. The present study is limited in Thiagarajar college of Preceptors, Madurai district only. This can be conducted with in a wider geographical area.
3. Similar studies may be conducted for arts and science college students.
4. Impact of internet addiction media on behaviour changes of the studies could be studied.

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A SURVEY ON INTERNET UTILITY AMONG COLLEGE STUDENTS

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Abstract

In the recent decade internet and mobile access are the two major attractions amongst the younger generation. However, with the advent of wireless communication technologies, the internet and its allied technologies are accessed from portable hand held devices like mobile phones, Personal Digital Assistance etc. From the total survey the college students use the internet mainly at Home 36(45%) followed by Travel 26(32.5%). The result indicated that the Internet have greater impact on college students education, recreation, research, shopping and online banking.

Introduction

In the recent decade internet and mobile access are the two major attractions amongst the younger generation. However, with the advent of wireless communication technologies, the internet and its allied technologies are accessed from portable hand held devices like mobile phones, Personal Digital Assistance etc. Due to proliferation and multi- disciplinary relevance in all the subjects, lot of digital information in various formats is knocking the doors .ICT are the two sides of the same coin and can't be separated from each other. The prime characteristic of m-phone includes high degree of mobility, flexibility and independence in use.

Objectives

The main objectives of the study are to:

- To know the internet utility places among college students.
- To know the purposes for using internet among college students.
- To know the usage of Internet over mobiles among college students.
- To know the usage period of Internet among college students.

Hypotheses

- There is difference in the internet utility places among college students.
- There is difference in the purposes of using internet among college students.
- There is difference in the usage of Internet over mobile phones among college students.
- There is difference in the usage period of Internet among college students.

Methodology

The survey method of research is used to carry out the present research work. The Self-made Questionnaire was used to collect the data from the college students. The size of the sample is 80.

Statistical Treatment

- Percentile Analysis

Data Analysis and Discussions

1. There is difference in the internet utility places among college students.

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Place of using Internet

S. No	Place of Using Mobile Phones	Frequency
1	Home	36(45%)
2	During Travel	26(32.5%)
3	Institution	10(12.5%)
4	Common Places	8(10%)

From the total survey the college students use the internet mainly at Home 36(45%) followed by Travel 26(32.5%). So there is difference in the internet utility places among college students 2. There is difference in the purposes of using internet among college students.

Purposes of Using Internet

S. No	Purposes of Using Mobile Phones	Frequently	Occasionally	Not Used
1	Seeing Movie Trailers	40 (50%)	37(46.25%)	3(3.75%)
2	Sending messages	11(13.75%)	63 (78.75%)	6(6.5%)
3	Educational purposes	5(6.25%)	65(81.25%)	10(12.5%)
4	Actors Gossip	5(6.25%)	55(68.75%)	20(25%)
5	Games	5(6.25%)	45(56.25%)	30(39.5%)
6	Update	2(2.5%)	12(15%)	56(82.5%)
7	Finance/ Banking	4(5%)	6(7.5%)	70(87.5%)
8	News Knowing	7(8.75%)	52(65%)	21(26.25%)
9	Shopping	7(8.75%)	55(68.75%)	18(22.5%)
10	Chatting	72(90%)	7(8.75%)	1(1.25%)

The Data analysis showed that 72(90%) of them frequently use internet for chatting**,** 40 (50%) of them frequently use for seeing movie trailers, 11(13.75%) of them frequently use internet for sending messages, 7(8.75%) of them frequently use internet for News knowing and Shopping, 5(6.25%) of them frequently use Internet Access for gaming,4(5%) of them frequently use mobiles for Banking Services. Similarly 65(81.25%) of them occasionally use internet for Educational purposes, 63 (78.75%) of them occasionally use internet for sending messages, 55(68.75%) of them occasionally use for knowing gossip. Similarly 70(87.5%) of them not used internet for Finance/ Banking. So there is difference in the purposes of using internet among college students.

3. There is difference in the usage of Internet over mobile phones among college students.

Use of Internet over Mobiles

S. No	Use of Internet over mobiles	frequently	occasionally	Not used
1	E. mail	5(6.25%)	55(68.75%)	20(25%)
2	Social Media	45(56.25%)	25(31.25%)	10(12.5%)
3	Apps	15(18.75%)	25(31.25%)	40(50%)
4	Google Play	5(6.25%)	65(81.25%)	10(12.5%)
5	Advertisement	4(5%)	56(70%)	20(25%)
6	Educational Websites	10(12.5%)	55(68.75%)	15(18.75%)
7	Download	15(18.75%)	45(56.25%)	20(25%)
8	Banking	5(6.25%)	30(39.5%)	45(56.25%)
9	Entertainment/ Games	39(48.75%)	31(39.75%)	10(12.5%)
10	Employment	12(15%)	49(61.25%)	19(26.75%)

The Data analysis showed that 45(56.25%) of them frequently use of Internet over mobiles for Social media, 39(48.75%)of them frequently use of Internet over mobiles for Entertainment and Games, 15(18.75%)of them frequently use of Internet over mobiles for Download and Apps.10(12.5%) of them frequently use of Internet over mobiles for Educational Websites. Similarly 65(81.25%) of them

occasionally use of Internet over mobiles for Google play, 55(68.75%) of them occasionally use of Internet over mobiles for Email and Educational Websites, 49(61.25%) them occasionally use of Internet over mobiles for Employment. Similarly 45(56.25%) of them not used Internet over mobiles for Banking. So there is difference inthe usage of Internet over mobile phones among college students.

4. There is difference in the usage period of Internet among college students.

S.No	Usage Period of Internet	Frequency
1	6 hours	8(10%)
2	4 hours	10(12.5%)
3	3hours	26(32.5%)
4	2 hours	36(45%)

From the total survey the college students use the internet mainly for two hours 36(45%) followed by three hours 26(32.5%). The college students use the internet for four hours 10(12.5%) followed by six hours 8(10%). So there is difference in the usage period of Internet among college students.

Educational Implications

The result indicated that the Internet have greater impact on college students education, recreation, research, shopping and online banking. Now use of mobile phone and internet are as essential as the food in day to day life of our college students. The learners can learn new things with this hand technology 24/7 and helps in travel and cost management.

Conclusion

The above study revealed that the College Students make greater use of internet to strengthen their position in all the activities. The internet service is the soul for Indian economical growth. The growth and development in mobile technology is fabulous, which makes academia life smarter and easier. It is need of the hour to grab and use the innovative advancement taken place in mobile technology for fast forwarding the routine, academic and professional activities as the future scope of higher education will more depend under the impression of E and M learning. The college students can become young entrepreneur with the help of internet utility and make the vision of our prime minister Digital India a greater success.

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CHALLENGES IN IMPLEMENTATION OF ICT ENABLED EDUCATION IN RURAL SCHOOLS

Mrs.A.Maria Jeyachandra Rani

Abstract

This article stresses on how ICT helps in improving the quality of education stating that information and communication technology is an important instrument that can transfer the present isolated, teacher-centered and book-centered learning environment into a student –centered environment. ICT can change the traditional concept of learning process and the components of ICT should be integrated in the education program me in such a way that teaching should be enabled to face the new demands and improve the efficiency and effectiveness of education at all levels in both formal and non-formal settings.ICT not only enhances the learning experience of student but also helps them develop the skill essential to participate effectively in the world of affairs. Knowledge of ICT and skills to use ICT has gained immense importance for today's teacher. The new learning environment developed by the ICT is called Interactive Learning Environment. In this situation, ICT enabled education in rural areas can be an innovative option to fill this literacy gap and to upgrade the teaching-learning process in the rural schools for tapping the huge reserves of human resources. In the process of bringing ICTs enabled education to the rural masses, there are many issues and challenges facing the rural education canters. The study explores these challenges and suggests suitable strategies for enabling smooth implementation of ICTs in rural education sphere for ensuring maximum impact and fuller utilization of resources.

Introduction

21st century is the age of Information and Communication Technology**.** All over the globe, there is a trend to use ICT in the teaching learning process. The teacher and learner must gain access to technology for improving learning outcomes. Educational reforms include successful designing and implementation of ICT in teaching learning process, which is the key to success **.**It involves use of computers, computer software and other devices to convert, store, and process, transmit and retrieve information and includes the services and application associated with them.ICT is an acronym that stands for: 1.Information-it covers the topics such as meaning and value of information; how information is controlled; the limitations of ICT; legal considerations; how data is captured, verified and stored for effective use; the manipulation, processing and distribution of information; keeping information secure and designing networks to share information. 2. Communication-networks of sending and receiving equipment, wires and satellite links. (a) Internal networks-Local Area Network (LAN) (b) external networks-Wide Area Network (WAN). 3. Technology-collection of techniques, knowledge of how to combine resources to produce desired products, to solve problems, fulfill the needs or satisfies wants; it includes technical methods, skills, processes, techniques, tools and raw materials. The Ministry of Human Resource Development (MHRD), Government of India and the Indian Span Research Organization(ISRO) took a path breaking policy decision to launch a dedicated educational satellite, in which the use of ICTs can make substantial changes both in teaching and learning.

Definition and Meaning of ICT

The United Nations Development Programme (UNDP) defines Information and Communication Technologies: "ICTs are basically information-handling tools - a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. They include the „old, ICTs of radio, television and telephone, and the„ new ICTs of computers, satellite and wireless technology and the Internet.

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These different tools are now able to work together, and combine to form our „networked world, a massive infrastructure of inter-connected telephone services, standardized computing hardware, the internet, radio and television, which reaches into every corner of the globe". Michiels and Van Crowde (2001) have defined Information and Communication Technologies or ICTs as "a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations. The range of technologies is increasing all the time and there is a convergence between the new technologies and conventional media".

Most devices can now be linked to others to share and exchange information and allow it to be used in such a way that they can also be categorized as ICTs. Even books are being incorporated into ICTs either through the potential for informal web publishing or more formal digital book publishing with designated readers or e-books. ICTs, therefore, are an expanding assembly of technologies that can be used to collect, store and share information between people using multiple devices and multiple media.

Need for ICT in Education

ICT is the convergence of computer, communication and content technologies. It has attracted the attention of academia, business, government and communities to use it for innovative profitable propositions. In order to compete in a global competitive environment, a highly skilled and educated workforce with aptitude and skill sets in application of ICT is inevitable for every nation. ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved scattered and rural populations, groups traditionally excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, children with special needs and the elderly, as well as all others who for reasons of cost or because of time constraints are unable to enrol on campus. Use of ICT will catalyse the cause and achieve the goals of inclusive education in schools.

There is no conclusive research to prove that student achievement is superior when using ICTs in the education space, either in the developed or in developing countries. However, there is a general consensus among practitioners and academicians that integration of ICTs in education has an overall positive impact on the learning environment. ICTs have the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change [Lemke and Coughlin (1998); Davis and Tearle (1999)]. In diverse socio-economic and cultural contexts, ICTs can be successfully leveraged to reach out to a greater number of students, including those to whom education was previously not easily accessible, and help in promoting learning, along with exposing students to the technical skills required for many occupations.

Other benefits of ICT in education are:

- It has the potential to improve education system of the nation
- It can transform the nature and quality of education as a whole
- It helps to enhance the quality of education by facilitating new forms of interaction between students, teachers, education employees and the community
- It acts as and provides students and teachers with new tools that enable improved learning and teaching and adds to skill formation
- It improves the learning process through the provision of more interactive educational materials that increase learner motivation and facilitate the easy acquisition of basic skills
- It makes education more accessible for all, bringing education to the doorstep of children living in remote rural locations by means of enabling distance learning
- It provides access to a vast treasure of educational resources and content for improving literacy
- It leads to integration of technologies with traditional educational activities although it can never replace the conventional teacher-student relationship that is so crucial to the development process

Challenges in Implementation of ICT Enabled Education in Rural Schools

Although ICT has the potential to improve education system of a country to a great extent, yet it is not the case in the developing countries. There are multiple issues and challenges confronting the implementation of ICT education in schools and educational institutions in these countries and the problems are much more magnified in case of schools located in remote villages and rural areas. For rural schools in specific, the introduction of ICT faces hindrances in the form of internal and external barriers. Internal barriers to ICT implementation in schools in rural locations include:

Lack of Trained Teachers

A major obstacle in the use of ICT in rural education is the lack of knowledge and skills. There is dearth of dynamic teachers formally trained in ICT. Moreover, there is hardly any quality training imparted on a regular basis to teachers involved in ICT education.

Unfavourable Organizational Culture and Poor Attitude and Beliefs

Often in developing nations, the educational organizations and school management fail to perceive the importance and seriousness of the role of ICT in education enhancement. Also, the teachers, attitudes and beliefs are outdated and orthodox. They are unaware and rigid and not willing to adapt to the change. They harbor false beliefs that ICT is meant primarily for the youngsters and are skeptical about the effectiveness and utility of ICTs in school education.

Shortage of time

In schools, teachers are usually burdened with multiple tasks other than teaching. Moreover, they have to teach all types of subjects along with ICT. They do not have time to design, develop and incorporate technology into teaching and learning. The teacher needs time to collaborate with other teachers as well as learn how to use hardware and software and at the same time keep oneself updated with the latest technology.

Issues of Maintenance and Upgrading of Equipment

Maintenance and upgrading of ICT equipments in rural schools is subject to their limited financial resources. Largely, the government initiatives are restricted by budgetary constraints. The ICT projects in rural schools are not self-sustainable. When the projects launched by government or private sector phases out, the maintenance of equipments need to be borne by the students. The students often with weak economic backgrounds are unable to fund the maintenance and computing facilities expenses.

Insufficient Funds

Appropriate and latest hardware and software facility availability determines the effective and efficient usage of technology. In developing countries, technology implementation into education systems is a difficult task as it requires a magnum of funds, infrastructure and support facilities. schools leaving a huge lacuna in the process of enabling ICT skills and imparting ICT education; thereby rendering the entire ICT experience meaningless.

Challenge of Language and Content

A large proportion of the educational software produced in the world market is in English. Majority of online content is available in English. In developing countries, English language proficiency is not high, especially outside the urban areas which becomes a serious barrier to maximizing the educational benefits of ICT. Crucial external barriers in the implementation of ICT in rural schools are:

Shortage of Equipments

There is lack of computers and computer-related resources such as printers, projectors, scanners, etc. in government schools in rural areas. The ratio of computer per student is insufficient. The

option of private schools is very few or missing in these regions. There is a mismatch between the complementing resources and inappropriate combination of ICT resources result into reduced diffusion of technology as well as poor ICT understanding in these educational institutions.

Unreliability of Equipment

Even the basic ICT equipments and computers possessed by rural schools are unreliable and undependable. The schools lack up-to-date hardware and software availability. Old and obsolete equipments are major hindrances to ICT adoption and application.

Lack of Technical Support

Rural schools face issues related to technical know-how, absence of ICT service centers, shortage of trained technical personnel. Whether provided by in-school staff or external service providers, or both, technical support specialists are essential to the continued viability of ICT use in a given school. Without on-site technical support, much time and money may be lost due to technical breakdowns. One of the major obstacle to optimizing computer use in schools has been the lack of timely technical support.

Resource Related Issues and Internet

Rural schools usually face trouble with respect to the availability of ICT related resources such as supporting infrastructure, uninterrupted electricity, supplementary resources like multimedia, projectors, scanners, smart boards, and so on. Despite being an integral component of the ICT, internet is lacking in most rural schools. Most schools cannot afford the high fees charged by internet providers and even where there is internet, slow or erratic connectivity destroys the very essence and impact of ICT. Other external factors inhibiting the usage of ICT in rural schools are social and cultural factors inherent to these regions, lack of initiative by community leaders, corruption and burglary.

Conclusion

Revolution in information and communication technologies has reduced national boundaries to meaningless lines drawn on maps. In this scenario, education has been identified as one of the services which need to be opened up for free flow of trade between countries. India is developing as a knowledge economy and it cannot function without the support of ICT. The gap between demand and supply of education has necessitated the government and institutions to formulate policies for more beneficial use of ICT. In order to bridge the gap, it is necessary to evolve cooperation between public and private stakeholders. There is a need to focus on improving four aspects of ICT - access, usage, economic impact and social impact.

Suggestions

The study makes the following suggestions for improving and enabling ICT education in rural India:

- There is a need for public-private partnership for resource mobilization for funding ICT education in rural areas
- To provide need-based ICT Education in rural areas specific to their skill sets
- To formulate policies to promote broad access to skills and competencies for learning and adopting ICT Provision of broad-based formal education of ICT
- To create awareness on ICT Education
- Give incentives to firms and individuals for encouraging involvement in continuous training in ICT Develop supportive infrastructure facilities such as electricity, internet, etc. Government should actively promote the usage of alternate sources of power to ensure a steady power supply to schools in rural areas.
- Indian educators will have to address as the needs of the learning community will change. Migration of rural Indians to urban areas is not the solution to the gnawing gap between the two regions.

Rather, with health, education, a bit of infrastructure and livelihood opportunity, life in rural India may become better and more welcoming than that in urban areas.

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ICT INTEREST OF B.Ed., STUDENT TEACHERS

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Abstract

The development of the term 'ICT' is an awesome trend in Education. ICT means Information and Communication Technology. Implementation of ICT in education leads to rapid changes in all areas of education, especially in the teaching-learning process. Normative survey method is used for the present study. The sample consists of 100 B.Ed., students. The study reveals that there is no significant difference between male and female B.Ed., students in respect of their ICT interest. There is a significant difference between the B.Ed., students in urban colleges and those in rural colleges in respect of their ICT interest. There is no significant difference between the B.Ed., students whose educational qualification is under-graduation and post-graduation in respect of their ICT interest.

Introduction

'ICT' is one of the most important terms in education. In olden days ICT included radio and television but nowadays ICT included newer digital technologies like computer and internet. These ICT devices have a great role in education and these are used as powerful enabling tools for education change and reform. Appropriate use of different ICT devices will strengthen the relevance of the educational process and raise the quality of education. Now ICT makes the teaching-learning process more effective and information can be accessed and shared instantly by a single touch. The use of ICT inn education will change entirely the life situation of human beings. ICT is an effective tool for the development of human knowledge that can be shared over time and distance. Because of these reasons the investigator decided to study the role of ICT in education. So this study has been undertaken for identifying the ICT interest of B.Ed., students'.

Objectives of the Study

The objectives of the study were to find out

1. The significant, difference in ICT interest between male and female B.Ed., students.
2. The significant difference in ICT interest between the B.Ed., students studying in urban colleges and those in rural colleges.
3. The significant difference in ICT interest between the B.Ed., students whose educational qualification is under-graduation / post-graduation.

Hypotheses of the Study

1. There is no significant difference in ICT interest between male and female B.Ed., students.
2. There is no significant difference in ICT interest between the B.Ed., students studying in urban colleges and those in rural colleges.
3. There is no significant difference in ICT interest between the B.Ed., students whose educational qualification is under-graduation / post-graduation.

Method of Study

Normative Survey method was adopted for the study.

The Sample

Random sampling technique was adopted for the study. The sample consists of 100 B.Ed., students. The distribution of the samples is given in the following table.

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Table 1 Distribution of the Sample

Gender		Locale		Educational Qualification	
Variable	**Sample size**	**Variable**	**Sample size**	**Variable**	**Sample size**
Male	30	Urban	65	UG	72
Female	70	Rural	35	PG	28

Tools Used in the Study

ICT Interest Inventory (III) for B.Ed., Students was developed and standardized by the investigator.

Statistical Techniques Used in the Study

The following statistical techniques were used for analysis and interpretation of the data in the study.

1. Descriptive Analysis
2. t-value

Analysis and Interpretation of the Data

The following are the results and interpretation of the data.

Null hypothesis 1

There is no significant difference in ICT interest between male and female B.Ed., students.

Table 2 Significance of the Difference between the Means of ICT Interest Scores of Male and Female B.Ed., Students

Sub- Samples	N	Mean	S.D.	't' Value	Significant at 0.05 Level
Male B.Ed., students	30	20.69	9.19	0.9	Not significant
Female B.Ed., students	70	20.13	9.38		

The details of the calculations are given in Table-II. The 't' value is found to be 0.90 which is not significant at 0.05 level. Therefore the null hypothesis is retained and it is concluded that there is no significant difference between male and female B.Ed., students is respect of their ICT interest. Thus there is no evidence in this study to show that the sex of B.Ed., students can cause significant difference in respect of their ICT interest.

Null Hypothesis 2

There is no significant difference in ICT interest between the B.Ed., students studying in urban colleges and those in rural colleges.

Table 3 Significance of the Difference between the Means of ICT Interest Scores of B.Ed., Students Studying Urban Colleges and in Rural Colleges

Sub- Samples	N	Mean	S.D.	't' Value	Significant at 0.05 Level
B.Ed., students studying in urban colleges	65	19.62	8.76	3.04	significant
B.Ed., students studying in rural colleges	35	21.62	9.95		

The details of the calculations are given in Table-III. The 't' value is found to be 3.04 which is significant at 0.05 level. Therefore the null hypothesis is rejected and it is concluded that there is significant difference between the B.Ed., students studying in urban colleges and those in rural colleges in respect of their ICT interest. Moreover, the B.Ed., students studying in rural colleges (Mean = 21.62) are found to be better than the B.Ed., students studying in urban colleges (Mean=19.62) in their ICT interest. Thus there is evidence in this study to show that the local of the colleges where the B.Ed., students and studying can cause significant difference in respect of their ICT interest.

Null Hypothesis 3

There is no significant difference in ICT interest between the B.Ed., students whose educational qualification is under-graduation/ post-graduation.

Table 4 Significance of the Difference between the Means of ICT Interest Scores of B.Ed., Students Whose Educational Qualification is Under Graduation / Post - Graduation

Sub- Samples	N	Mean	S.D.	't' Value	Significant at 0.05 Level
B.Ed., students whose educational qualification is urban colleges	72	20.63	9.57	0.85	Not significant
B.Ed., students whose educational qualification was post-graduation	28	20.1	8.91		

The details of the calculations are given in Table-IV. The 't' value is found to be 0.85 which is not significant at 0.05 level. Therefore the null hypothesis is retained and it is concluded that there is no significant difference between the B.Ed., students whose educational qualification is under-graduation / post-graduation in respect of their ICT interest. Thus there is no evidence in this study to show that the educational qualification of B.Ed., students can cause significant difference in respect of their ICT interest.

Finding of the Study

The following are the findings of the study.

1. There is no significant difference between male and female B.Ed., students in respect of their ICT interest.
2. There is significant difference between the B.Ed., students studying in urban colleges and those in rural colleges in respect of their ICT interest. Moreover, the B.Ed., students studying in rural colleges are found to be better than the B.Ed., students studying in urban colleges in their ICT interest.
3. There is no significant difference between the B.Ed., students whose educational qualification is under graduation / post-graduation in respect of their ICT interest.

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STRATEGIES FOR IMPROVING THE EDUCATIONAL VITALITY TO PROMOTE STUDENTS ACADEMIC EXCELLENCE

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Abstract

Educational technology is the effective use of technological tools in learning. As a concept, it concerns an array of tools, such as media, machines and networking hardware, as well as considering underlying theoretical perspectives for their effective application Educational technology is not restricted to high technology, it includes an array of approaches, components, and delivery methods.ICT coupled with suitable intervention strategies is sure to promote students' academic excellence.

Introduction

"Knowledge depends on information. We are all familiar with the ways in which the information and communication technology revolution has affected the global spread of images, symbols, sounds, ideologies, repertoires and even ideas. But when we speak of knowledge, we imply a superior sort of understanding. It is more refined, rigorous, and reflexive. Knowledge can't flow so easily as other virtual expressions because it must be sifted, reassembled, and assessed. And that means that its nodes of accumulation and transformation matter even in a world of information flows." There are innumerable ways in which novelty can be brought about in the classroom. Some of these strategies are discussed below.

Cartoons

Cartoons are a great way to challenge thinking about an issue. The simple drawings with or without captions are packed with meaning and stir many responses. Cartoons capture new ideas through humour, satire and caricature, bringing together disparate ideas or symbols. Cartoons are often specific to a particular time and culture and can be misunderstood and cause offence outside that context.

Cartoons can be used in the global education classroom to:

- stimulate interest and involve students across a range of literacy levels
- challenge thinking on controversial topics
- analyse historical or current issues
- gauge understanding and attitudes
- Develop visual literacy.

Activities tell a story

- Cut up the pictures and ask students to re-order the story. Make this more difficult and linguistically challenging by giving separate frames to each student in a group and asking them not to show the pictures until they have arrived at an order through describing them.
- Remove the last picture of a cartoon and ask students to think of, or draw, an ending. Discuss the results.
- Remove the captions and ask students to match them to each cartoon or write the sentences that tell the story.

Controversial Issues

A controversial issue is one in which there are competing beliefs, cultural practices, values and interests; strong disagreements and emotions; and potential political sensitivity.

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Teaching with a global perspective inevitably involves confronting controversial issues, events or attitudes. Engaging with complex and potentially divisive issues enables students to build skills in four of the general capabilities of the Curriculum: Critical and Creative Thinking; Personal and Social Capability; Intercultural Understanding and Ethical Understanding. Such engagement strengthens skills in debate, listening, problem solving, evaluating evidence, and in working with empathy and understanding.

Diversity

Identity and cultural diversity is one of the five learning emphases of global education, and is inherent in values education, civics and citizenship education and higher order thinking in the curriculum. Diversity brings great richness of ideas, behaviours and attitudes, but we must learn to value this in order to live in harmony together. We are enriched by learning about different ways of seeing, thinking and doing, but sometimes we can also be challenged by ideas or behaviours that are outside the mainstream.

Some questions to help explore our own biases and assumptions:

- Do we use inclusive language?
- Do we use resources that reflect diverse cultures and opinions?
- Are we actively learning about alternative cultures and ideas?
- Developing Intercultural Understanding is a professional learning package

Fact and Opinion

Much of what we read and view is a mixture of fact and opinion. Distinguishing between them is important for evaluating texts and developing persuasive arguments as we become active global citizens and build a better world. A fact can be proven and is real for all people. For example, 'Educating girls helps people escape poverty' is a fact, as evidence can be gathered that shows that for girls, extra years of basic education improves employment opportunities, increases marriage age and improves their health and the health of their children. 'All girls should help their families' is a person's or group's opinion, belief, judgement or feeling and cannot be proven true.

Inter cultural understanding

Intercultural understanding starts by becoming more aware of our own culture and learning about other cultures so there can be real engagement, sharing and learning together. The Intercultural Understanding learning continuum is organised into three interrelated organising elements:

- Recognising culture and developing respect
- Interacting and empathising with others
- Reflecting on intercultural experiences and taking responsibility.

Intercultural understanding involves clarifying our own values, attitudes and beliefs, and developing a spirit of openness and a valuing of diversity. It is built on respectful relationships, which take time to develop, and learning to understand what is important and what is offensive. It involves being comfortable with difference, awareness of our own biases, prejudices and perspectives and the avoidance of language which may be exclusive or insulting.

Persuasive presentations

The heart of global education is creating global citizens who are active in shaping a better world for all. This may often involve writing or presenting arguments to persuade readers or listeners to change their ideas and behaviours. To do this, students need to have a good understanding of particular issues and the various perspectives other people may have on them. Students need to know how to present a strongly argued case to convince readers or listeners to consider the points rather than dismiss them. Engage the audience with stories, humour, emotive language, repetition and short sentences. Be aware of their knowledge and possible perspectives so you can connect with them and convince them. Develop the argument with clear reasoning supported by evidence such as statistics, expert opinion, facts, and witness

statements, and present alternative perspectives on problems. Conclude with a summary of the argument and an appeal or a challenge.

Simulation and Online Games

Simulation and online games invite participants to learn about different perspectives of a complex global issue. They simplify a situation, allowing participants to address situations that have no clear right or wrong answers. They can help develop the Curriculum general capabilities Literacy, Numeracy, Critical and Creative Thinking, Personal and Social Capability, Ethical Understanding and Intercultural Understanding. Teachers play a vital role in helping students draw out the learning.

Games may use a board on which most of the action takes place. They may be role-plays in which participants have a specific role to play within a defined situation or in a wide range of virtual environments, playing individually with programmed alternatives or interactively with people around the world over time.

Examples of games

- Accessing water in Indian village – a role-play for middle to upper primary students to experience how access to water may influence life in positive and negative ways
- Food Force – an online game for secondary students about delivering food aid in crisis areas
- Quandary – an online game for middle primary to lower secondary students about ethical decision-making
- Power Up – an online multiplayer game that allows teams of secondary students to explore, design and build systems to harness renewable energy sources as alternatives to burning fossil fuels
- Stop Disasters Game – an online strategy game where upper primary and lower secondary students aim to reduce the impact of natural hazards

Statistics

Between 1990 and 2005, the number of poor people in the world fell by 400 million. Understanding data, statistics and percentages is vital when making sense of the world. Data can be used to describe a characteristic (for example, the number of poor people in the world); to compare (for example, the number of poor people in 1990 and 2005); and to find relationships between variables (for example, poverty and GDP per capita). Developing good numeracy skills helps students interpret and question the data and become informed global citizens. Data may be incomplete (as it is costly and difficult to collect), may define concepts differently (for example, what it means to be a poor person), or may not present a complete picture

Students should be encouraged to ask:

- What is the data measuring or representing?
- What does the data not measure or represent?
- How accurate are the figures? (for example, date, actual or estimation, sample size)
- What is the range of results that averages have come from? (High and low values cancel each other out.)
- What factors contribute to the trends?
- What relationships, trends or implications can be drawn from the data?

Storytelling

"Tell me a fact and I'll learn. Tell me the truth and I'll believe. But tell me a story and it will live in my heart forever." - Native American proverb

For thousands of years people have told stories to teach children about culture and values, and to entertain. Listening to stories can excite our imagination, foster curiosity, provide information, transform thinking, and promote reconciliation. Stories help turn abstract ideas into understandings. Telling and

reading stories with global themes, set in other countries or written by people of different cultures, provides opportunities for integrating global perspectives across the curriculum. Storytelling can help develop general capabilities of Literacy, Numeracy, Critical and Creative Thinking, Ethical Understanding and Intercultural Understanding. Stories help introduce and tackle difficult issues in a positive and realistic way. Students engage with characters and narrative to make links between their own experience and those of others and gain insights into different ways of viewing the world. Storytelling may use technology, combining principles of storytelling with video, audio, photos, graphics and web publishing.

One way to learn about how to tell a story is to listen to other storytellers. Use stories, picture storybooks and digital storytelling to develop a global perspective in the following areas.

- English: examining narrative form; reading and retelling; discussing characters; drawing charts to show links between people in the story and/or the students' own world; three-level questioning (literal, interpretive and inferential); challenging stereotypes; dramatising; and story maps.
- Geography: observing, recording and describing a social or physical environmental pattern, problem or issue and its location; exploring and evaluating effects
- History: examining the underlying themes of community organisation, daily life, power and authority, and relationships between people, land and time
- Mathematics: representing and interpreting data, patterns, space, measurement and probability; calculating; and problem-solving
- Science: examining the history of discoveries and biographies of scientists
- The Arts: examining and experimenting with the effects of colour, cultural design and style of illustrations; discussing the form and effect of styles; and researching music and dance to accompany or retell the story.

Thinking skills

Developing a repertoire of thinking skills and practices will enable students to work with the complex issues and multiple perspectives that form the basis of global education. Critical and Creative Thinking is one of the seven general capabilities in the Curriculum. Teaching activities on this site have been constructed with this focus in mind. While not exhaustive, the following links like Visible thinking, Graphic Organisers, Changing Minds and Deep thinking provide additional sources of ideas and support for developing a thinking culture.

Web2.0 tools and apps

Web 2.0 tools and applications (apps) can help keep learners engaged, meet their different needs and connect them with their peers in other locations, thereby increasing their global awareness. However, tools and apps are only a vehicle for learning. Used effectively, they will assist students in sorting information, communicating with others and, where appropriate, publishing in the digital world. New tools and apps emerge every day.

Useful websites

- Ed Tech Toolbox lists tools by task, such as avatar creation, blogging, comics and animation, maps and presentations. It also includes Top 10 Web Tools and 100+ Google Tricks.
- Bright Ideas is a blog to actively engage with ICT, and to share tools and experiences.
- Cybersmart provides information, resources and practical advice to empower young people to be safe online.

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ICT IN EDUCATION

Dr.N.Subramanian

"ICT," an abbreviation for information and communication technology, refers to all equipment, applications and services that involve communication. Computers, cellphones, televisions, radios and satellite systems are all part of ICT. The ever-changing field of technology has made the world a smaller place, as information is easily and rapidly exchanged through devices of telecommunication. The Internet has proved a huge advancement in the ICT community. Videoconferencing and distance learning allow people thousands of miles apart to speak together as if they were in the same room. ICT involves more than just sharing of information, however. It also includes the quest to improve communication throughout the world, especially to more underserved areas of the globe. Information and communication technologies (ICT) are widely believed to be important potential levers to introduce and sustain education reform efforts. This paper points out the details about ICT for content development and administration. This paper also explains about the use of ICT in school education, higher education and distance education.

Information and Communication Technology

"ICT," an abbreviation for information and communication technology, refers to all equipment, applications and services that involve communication. Computers, cellphones, televisions, radios and satellite systems are all part of ICT. The ever-changing field of technology has made the world a smaller place, as information is easily and rapidly exchanged through devices of telecommunication. The Internet has proved a huge advancement in the ICT community. Videoconferencing and distance learning allow people thousands of miles apart to speak together as if they were in the same room. ICT involves more than just sharing of information, however. It also includes the quest to improve communication throughout the world, especially to more underserved areas of the globe. Information and communication technologies (ICT) are widely believed to be important potential levers to introduce and sustain education reform efforts. Information and Communication Technologies (ICTs) play an increasingly important role in the way we communicate, learn and live. The challenge is to effectively harness these technologies in a way that serves the interests of learners and the larger teaching/learning community. UNESCO considers that ICTs can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development as well as improve education management, governance and administration provided the right mix of policies, technologies and capacities are in place. UNESCO takes a comprehensive approach to ICTs in education. It is through the Organization's Intersectoral Platform that it focuses on the joint work of the Communication and Information, Education and Science Sectors where the issues of access, inclusion, equity and quality in education can be addressed.

ICT for Content Development and Administration

Only presence of ICT in education sector is not sufficient there is also great need for development of good and relevant quality content. ICT can be utilized for the major areas which are content and administration. In this area certain initiatives have been taken at state and Centre levels. For content development in India certain initiatives have been taken for creating digital repositories and learning objects. Such initiatives include Sakshat portal of Govt. of India (GOI), National Programme of Technology Enhanced Learning (NPTEL) and Multimedia Educational Resource for Learning and Online Teaching (MERLOT) which create quality digital content for different levels of Education. Certain states have also taken a step forward to bring transparency in the education system through ICT.

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Haryana has also taken a step in this side by providing certain machines for marking attendance of teachers in schools. Biometric attendance system can really help in improving attendance of those schools where attendance of teachers has always been a hot issue. Delhi Government has been a pioneer in using ICTs for better administration of the education system. The Department of Education, Government of Delhi, having a lot schools , teachers and students under its administrative jurisdiction has developed a comprehensive and functionally effective Web-based and GIS-based Management Information System (MIS) . Employee Attendance Report also facilitates an objective inspection, as the attendance of all the schools are on display for the purview of the officers of the Department. With the help of such a transparent system everyone including citizens, schools, zonal offices, district offices, regional offices, and various branches at the headquarters can share information using the Web-enabled software. Information for all stakeholders—students, teachers, and administrators—is available online through the Directorate's Web site (edudel.gov.in) this includes information on admissions, mark sheets, teacher attendance, transfers, and pay slips etc. Certain initiatives like all correspondence may be done electronically , attendance of staff may be recorded daily online to the directorate, major notices, information regarding implementation of various Government schemes can be easily applied and can be shared by other departments as well for making improvement in the present system. Such types of initiatives provide transparency in the society which is the major requirement of the people in the present day. There may be many more examples of such initiatives but the need of the hour is to replicate related interoperable projects showing great impact on the society. United Nations Educational Scientific and Cultural Organisation (UNESCO) has published a summary of case studies conducted in nine countries in different parts of world and most of these studies reflect the necessity of having multi-prong strategies for teacher education and to improve their expertise. Existing Open and distance education systems use different technology options for delivering content- EduSAT, other TV and Radio channels. All these options use ICT. A local area network at school level can enable automation of a variety of processes. Beginning with library automation, locally cached offline access to internet resources, office automation, maintenance of records, student tracking, resource planning, using the existing ICT infrastructure will increase efficiencies. At the same time benefits in savings of cost, time and effort will also be available.

ICT in School Education

ICT in RMSA

The Information and Communication Technology (ICT) in schools have been subsumed in the Rashtriya Madhyamik Shiksha Abhiyan (RMSA). Now ICT in Schools is a component of the RMSA. The Information and Communication Technology (ICT) in Schools was launched in December, 2004 and revised in 2010 to provide opportunities to secondary stage students to mainly build their capacity on ICT skills and make them learn through computer aided learning process. The Scheme is a major catalyst to bridge the digital divide amongst students of various socio economic and other geographical barriers. The Scheme provides support to States/UTs to establish computer labs on sustainable basis.

National Award for Teachers using ICT

Under the ICT in Schools, to promote computer enabled learning and usage of ICT in teaching in Government and Government aided Secondary and Higher Secondary Schools has provision for instituting the National Award for innovative use of ICT to motivate the Teachers and Teacher Educators for innovative use of ICT in teaching-learning. The National Award for Teachers using ICT for innovation in education for the year 2010, 2011, 2012 and 2013 was given away to the 9 awardees along with the National Teacher Award on Teachers Day.

ICT in Higher Education

India has taken up major initiatives in terms of content delivery and furthering education through Information and Communication Technology. For instance Gyan Darshan was launched in 2000

to broadcast educational programs for school kids, university students, and adults. Similarly Gyan Vani was another such important step which broadcast programs contributed by institutions such as IGNOU and IITs. Under the UGC country wide classroom initiative, education programs are broadcast on Gyan Darshan and Doordarshan's National Channel (DD1) everyday. E-Gyankosh which aims at preserving digital learning resources is a knowledge repository launched by IGNOU in 2005. Almost 95% of IGNOU's printed material has been digitized and uploaded on the repository. The National Programme for Technology Enhanced Learning (NPTEL) launched in 2001 is another joint initiative of IITs and II Sc which promotes education through technology. Moreover, the ambitious National Mission on Education through ICT was launched by the government to harness ICT's potential throughout the length and breadth of the country. In 2009, the government approved the landmark "National Mission on Education through ICT" scheme. The National Mission on Education through ICT is centrally sponsored scheme submitted by the Ministry of HRD and approved by the Cabinet Committee on Economic Affairs (CCEA). The Mission has planned a variety of initiatives aimed at developing and standardizing digital content for Indian higher education segment. The Mission envisions catering to the learning needs of 500 million people in the country.

ICT in Teacher Education

- Learning by demand expresses the lack of support and specification of achievable goals expected from the students by their professors. It may be difficult for a professor to demand this from students if he or she is not fully aware of the possibilities given by ICT.
- Learning with the help of others refers to the fact that students can develop their ICT skills by communicating with other students. Learning with the help of others is a very good way of learning, but is not always sufficient. Students' self learning needs to be supplemented by experienced instructors. Students want their intellectual abilities to be challenged by demands on them by someone who masters ICT better than they do themselves. If students report being satisfied with their ICT training, they still often feel that they are missing one important element. They feel that they do not have enough time to use and reinforce the knowledge they have acquired. This is not easy to obtain within teacher education programmes. To solve this perceived problem, students would like to see ICT applications as an integrated part of each course.
- A way to establish ICT knowledge in teacher education is to instigate continuous competence development, in which the initial knowledge acquired constitutes the prime basis for career-long learning. This strategy calls for teacher education to provide and introduce an open-ended lifelong learning programme, in which new concepts and knowledge are constantly provided to both pre-service and in-service teachers.

ICT in Distance Education

The Information Communication Technology plays a much broader role along with education modules such as the distance learning programs and education efforts for students unable to study in universities of their choice, which were earlier not possible. Since the introduction of long distance programs in 1950s, many universities in developing nations provide distance education schemes and provide free courseware content through print media, television, and audio visual contents, specifically for primary and higher education students. Today, these distance learning programs have now been providing course materials in distance teacher training institutes. Notable examples of some Universities providing distance programs in the world include Mexico's Telesecundaria, China's Central Radio and TV University, Indonesia's Universities Terbuka, and India's Indira Gandhi National Open University. However they receive thousands of applications every year and provide millions of educational content to the students, but programs like these disable the abilities of a teacher – student face to face interaction, enabling students with almost no opportunity to interact with the teacher or the fellow students. This low

interactive session creates low completion rates of programs or courses thus adversely affecting the growth of distance education schemes.

Conclusion

Government cooperation is necessary for ICT programmes to have substantial impact and be sustainable. In the attempt to reevaluate the education delivery system and curriculum of countries to include ICT, Governments have to consider the social context in which they are implementing this new phenomenon. The realities of individual countries and the disparities within and across their geographies, including their limitations say, the language barrier, should be considered and the availability of ICT should be made according to the needs and desires of the countries in order to facilitate appropriate learning and local ownership of knowledge. Government policies must demonstrate political will and champion the integration of ICT purposes and be in line with national development goals and frameworks. In countries where implementation capacity is weak and misuse of resources can be a major problem, ICT can further enable the country to enhance its capacity building efforts and reduce the opportunity for corruption. Not only are national policies necessary but the Government also should assist in building organizational and institutional capacity to effectively deal with the complexities of integrating and implementing ICT in school education. Ministries of Education need to reconsider how they institutionalize positions of responsibility for ICT. The ICT unit's roles relate directly to improvement of teaching and learning using ICT, and the mix of skills required differs substantially from that of a traditional IT unit, providing infrastructural systems support. Therefore, appropriate considerations have to be taken to establish the right kind of institutions and positions to take the mission forward.

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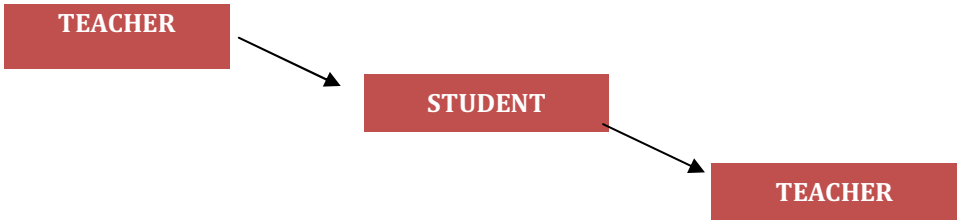
M-LEARNING Vs REAL CLASSROOM TEACHING

Dr.P.Mallapparaj

Introduction

Education and training is the process by which the wisdom, knowledge and skills of one generation are passed on to the next. This education process has been going on since time immemorial. It is the central process in the conservation and development of human culture. It began at the dawn of time and has continued to today. Eventually society developed for it schools as the privileged in 21th century, universities were added to schools as additional places where the education process would occur. To these were added, more recently, training centers for the teaching and learning of skills that are needed for the functioning of society. Today there are two forms of education and training: conventional education and distance education. This paper claims that virtual classroom can comprise as d- learning, e-learning and m-learning. This paper suggested the M- learning environment for conventional classroom learning teaching – learning process.

Conventional Classroom Learning

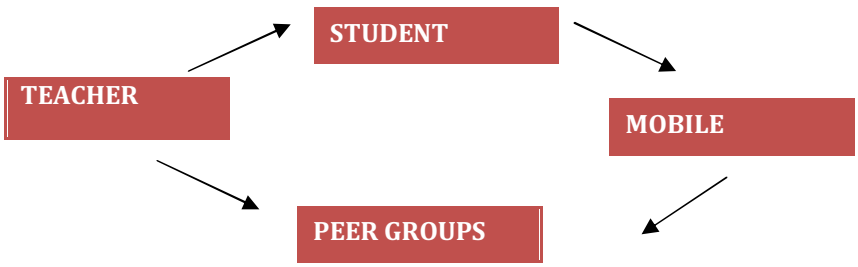


We are following this structure of education, maybe we are in the technology world. This type of teaching is boring and monotonous in terms of students view now-a-days. This type of teaching should be altered and also take care about the culture of us.

Need for M-Learning

Now-a-days a one year born baby easily operates the mobile of its parents. And a third standard student fully knows to operate the mobile phone completely. They are playing games using whatsapp, face book and videos etc. They are easily operates the touch phones and new technologies implemented in the mobile. Moreover, if should give the student-like environment, the teaching-learning process will be effective.

M- Learning Environment



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The school should allow the students to handle mobile phones individually. They should communicate the peer groups and their tutors by their mobile. In the classroom teaching, if there any clarification, the teacher should ask the students that go to google and tell the answer instead of telling see the book to tell the answer. This would encourage the students to tell the different type of answers and is shared by all to update the current status.

Role of the School Management

The management and the principal of the institution should avail the free wifi connection to all the students and to provide ip address to the students. The usage should be limited depends upon the age and class. Their rapports and usage of network should be noted to avoid the misbehavior also. The management should encourage the teachers for online assignments, online scoring, attendance etc. They should motivate the parents to communicate the teachers and management by messages and mails etc.

Role of the Teachers

Teacher never be replaced by any of the technologies. But the technologies should support the teaching-learning process and evaluation also.

The teacher should

- Know the current technologies
- Accept the response from the students
- Allow the students to communicate the peers
- Should understand the age group
- Encourage the students for innovations

Advantages of M-Learning

There are number of advantages are using M-learning as

- Student user friendliness
- Didactic effectiveness
- Technical feasibility
- Cost effectiveness
- Administrative learning support
  - Administrative information
  - Access to examination and test marks via m portal
  - Access to financial statements etc
- Academic learning support
  - Communication and interaction
  - Feedback on assignment and tasks
  - Motivational and instructional messages etc

Conclusion

The opportunity through open by the technological advancement is M-learning. The educational sector and teacher education in particular need to take a leadership role in the transformation of educational process to reap the full benefits of ICT. Such transformation would require substantial investment in software and hardware acquisition redesigning of infrastructure, training, and development, technical support, research and innovation. If we are giving this type education to the students, we don't want to go other countries.

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ICT SKILLS AMONG B.Ed. STUDENTS

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Abstract

In the present study the investigator has attempted to study the ICT skills among B.Ed. students. The sample consisted of 300 B.Ed. students chosen from 10 colleges in Madurai District. The investigator adopted the survey method. The findings reveal that there is significant difference between ICT skills among B.Ed. students in respect of background variables.

Introduction

Information and Communication technologies (ICTs) are a major factor in shaping the new global economy and producing rapid changes in society. Within the past decade, the new ICT tools have fundamentally changed the way people communicate and do business. They have produced significant transformations in industry, agriculture, medicine, business, engineering and other fields. They also have the potential to transform the nature of education where and how learning takes place and the roles of students and teachers in the learning process.

Teacher education institutions may either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological change. For education to reap the full benefits of ICT in learning, it is essential that pre-service and in-service teachers acquire basic ICT skills and competencies. The critical factor in the successful integration of ICT in to teacher education is the extent to which the teacher educators have the knowledge and skills in ICT integration. A well-conceived and sustained program me of professional development is therefore required to enable the teacher educators and master teachers to develop these skills. This may require development and revision of existing teacher training curriculum guidelines for pre-service and in-service teachers.

Every profession demands certain specific skills and competencies on the part of its practitioners. Similarly, if one believes that teaching is a profession, one should demonstrate certain skills and competencies which can influence learning in the students and help them achieve their goal of life. The point of emphasis here is that the Bed program me should instill certain specific skills in them, as in-service students of education.

Significant of the Study

In today's scenario ICT plays a significant role in all the fields. By using ICT all fields show a tremendous development. In the education field also ICT plays a major role by increasing the capacity of the learners. Today's teacher has to be more competent in order to meet the growing demands in the education field. The focus of ICT is to bring out the attention of students. The teacher has to attract the students by using his/her competencies and skills. The teacher has to understand the student mentality. ICT greatly helps to increase the competencies of the teacher. The education systems around the world are under increasing pressure to use the new Information and Communication Technology; ICT enhances the knowledge and skills of the students in the ensuring years of the 21st Century. The 1998 UNESCO World Education Report insisted on implementing the Information and Communication Technology (ICT) immediately in higher education to pave the way for quality. Designing and implementing emerging new technologies in higher education will enable us to escape from conversional methods of teaching and learning.

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Objectives of the Study

1. To find out whether there is any significant difference between male and female B.Ed students in their ICT skills.
2. To find out whether there is any significant difference between urban and rural B.Ed students in their ICT skills.
3. To find out whether there is any significant difference between arts and science B.Ed students in their ICT skills.

Hypotheses of the Study

1. There is no significant difference between male and female B.Ed students in their ICT skills.
2. There is no significant difference between urban and rural B.Ed students in their ICT skills.
3. There is no significant difference between arts and science B.Ed students in their ICT skills.

Population of the Study

The population for the present study consisted of B.Ed trainees studying in Madurai District.

Sample for the Study

The investigator used random sampling technique. 10 colleges in Madurai District were selected randomly and from each college, the studying students in B.Ed were selected randomly. The total sample consisted of 300 students.

Method of the Study

The survey method was used for the present study.

Tool Used in this Study

ICT skills inventory validated by the investigator

Statistical Techniques Used

Mean, Standard Deviation and't' test were used for this study.

Data Analysis

Null Hypothesis-1

There is no significant difference between male and female B.Ed students in their ICT skills.

Table: 1 Difference between Male and Female B.Ed Students in their ICT Skills

Dimensions of ICT skills	Male (N=131)		Female (N=169)		Calculated 't' value	Remarks at 5 % level
	Mean	SD	Mean	SD		
Computer Management	68.70	7.499	71.49	7.999	3.07	S
Preparation of learning materials	86.56	10.454	90.61	9.302	3.54	S
Basic presentation	37.79	6.433	38.91	5.603	1.60	NS
Use of internet	52.64	6.349	53.76	6.998	1.43	NS
Satisfaction in teaching through ICT skills	27.17	2.946	28.49	2.946	3.85	S
ICT skills in Total	272.85	28.698	282.80	26.389	3.10	S

(At 5% levels of significance the table value of't' is 1.96)

It is inferred from the above table that there is no significant difference between male and female B.Ed students in their basic presentation, use of internet, but there is significant difference between male and female B.Ed students in their computer management, preparation of learning materials, Satisfaction in teaching through ICT skills and ICT skills in Total.

Null Hypothesis -2

There is no significant difference between urban and rural B.Ed students in their ICT skills.

Table: 2 Difference between Urban and Rural B.Ed Students in their ICT Skills

Dimensions of ICT skills	URBAN (N=131)		RURAL(N=169)		Calculated 't' value	Remarks at 5 % level
	Mean	SD	Mean	SD		
Computer Management	15.37	2.70	15.64	3.53	0.73	NS
Preparation of learning materials	10.75	2.61	9.81	2.93	2.88	S
Basic presentation	9.41	1.95	9.54	2.03	0.56	NS
Use of internet	14.32	2.738	14.75	2.824	1.31	NS
Satisfaction in teaching through ICT skills	21.60	3.020	21.44	3.943	0.37	NS
ICT skills in Total	71.44	9.023	71.18	11.157	6.22	NS

(At 5% levels of significance the table value of't' is 1.96)

It is inferred from the above table that there is no significance difference between male and female students in their Computer Management, basic presentation, use of internet, Satisfaction in teaching through ICT skills in to, but there is significance difference between urban and rural students in their preparation of learning materials.

Hypothesis -3

There is no significant difference between arts and science B.Ed students in their ICT skills.

Table: 3 Differences between Arts and Science B.Ed Students in their ICT Skills

Dimensions of ICT skills	Arts (N=131)		Science (N=169)		Calculated 't' value	Remarks at 5 % level
	Mean	SD	Mean	SD		
Computer Management	70.26	7.764	70.33	8.833	0.05	NS
Preparation of learning materials	88.89	9.453	88.49	13.296	0.23	NS
Basic presentation	38.54	5.920	37.62	6.508	0.89	NS
Use of internet	53.53	5.922	51.56	10.652	1.70	NS
Satisfaction in teaching through ICT skills	27.93	2.857	27.82	3.953	0.20	NS
ICT skills in Total	278.85	26.687	275.82	35.415	0.63	NS

(At 5% levels of significance the table value of't' is 1.96)

It is inferred from the above table that there is no significant difference between arts and science Bed students in their computer management, preparation learning materials, basic presentation, use of internet, Satisfaction in teaching through ICT skills, and ICT skills in total.

Findings

1. There is no significant difference between male and female Bed students in their basic presentation, use of internet, but there is significant difference between male and female Bed students in their computer management, preparation of learning materials, Satisfaction in teaching through ICT skills and ICT skills in Total.
2. There is no significance difference between male and female students in their Computer Management, basic presentation, use of internet, Satisfaction in teaching through ICT skills in to, but there is significance difference between urban and rural students in their preparation of learning materials.
3. There is no significant difference between arts and science Bed students in their computer management, preparation learning materials, basic presentation, use of internet, Satisfaction in teaching through ICT skills, and ICT skills.

Interpretation

The't' test result reveals that male and urban students are better than the female students in their preparation of learning materials. This may be due to the fact that urban boys are spending most of their time with the computers. They don't have any restriction to go anywhere and a anytime to learn new technologies.

Recommendations

1. Adequate steps should be taken to improve computer laboratories, libraries and internet facilities in colleges of education.
2. The college authorities should give more importance to arranging discussion, debates, seminar, and symposia for the dissemination of ICT advancement. Besides these all the B.Ed trainees must update their knowledge.
3. Teacher educators should help the trainees explore and develop interest in ICT by curricular and co-curricular activities.

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CLASSROOM INTERACTION USING ICT

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Abstract

This article presents a new classroom observations analysis tool (CLI-O: Class Learning Interactions – Observation tool). The CLI-O tool enables the collection of various data regarding the use of ICT tools, organization of learning, and teacher-student interactions in the lesson. Several examples demonstrating the use of CLI-O and some preliminary findings derived from this tool are presented. CLI-O was developed in order to answer the question: Is learning in an ICT-based environment characterized by a unique pedagogy expressed, for example, by student-centered pedagogy while the teacher serves as a guide who mediates learning using a variety of technological tools. For example, in lessons observed and analyzed by CLI-O in the present study, a large part of the learning was found to be whole class learning, mainly frontal learning, and the teacher was at the focus of the lesson. CLI-O supplies a systematic description of classroom processes and enables teachers, teacher educators, and researchers to examine the implementation of ICT in teaching and learning and perceive it as a gradual ongoing process of building a new pedagogy tailored to the needs of the 21st century Keywords: Interactive learning, class observation, ICT-based teaching. In order to examining the methodological changes that ICTs bring to teaching from an interaction processes in various face-to-face, blended learning and e-learning subjects. The methodological design was based on there three data collection techniques: documentary analysis of subject curricula, lecturer and student questionnaires, and lecturer interviews. Students use more technological tools to communicate (e-mail, forums, chats, social networks etc). Dorado (2006) analyses networking as a source of learning, with the idea of going beyond models that centre on technological factors(those focusing attention on the use of tools) and on content.

Introduction

A learning environment that incorporates ICT (Information and Communications Technology) may afford possibilities for interactive learning, in which the students are active, receive feedback (from the teacher and/or from the ICT tools), and thus improve their understanding and construct new knowledge (Schwartz et al. as cited in Committee on Developments in the Science of Learning, 2000). Studies performed in ICT-based environments demonstrated that the teacher can more easily serve as a guide, counselor, and coordinator (Tubin, Mioduser, Nachmias, & Forkosh-Baruch, 2003; Zeira, 2002), such that it will lead to a relationship with the students which promotes familiarity and collaboration rather than authoritativeness (Burns & Polman, 2006; Freire, 1981). Thus, the conduct of a class in which ICT-based learning takes place is expected, at least potentially, to differ from that taking place in a "traditional" classroom where the teacher is the exclusive authority. Utilization of the potential inherent in ICT tools for improving teaching learning processes may lead to a student-centered learning interaction, under guidance of the teacher. Nonetheless, it was found that in practice, use of interactive ICT tools in the lesson do not necessarily ensure such an innovative pedagogical interaction in the classroom (Hennessy, Deaney, Ruthven, & Winterbottom, 2007).

What Is ICT

Communications and Technology (ICT) is a term that refers to all the hardware and software that people use to send and receive information. Social networking sites such as Face book, Twitter and MySpace, computers, phones and tablets make up the term ICT.

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Over the past few years, the ICT sector has grow substantially with a lot of new companies releasing new gadgets to improve how we communicate. ICT should be a shortening for "information, communication and technology" so that it is broad enough to include all the different aspects of what the acronym stands for. Some people focus on the "technology" whilst others focus on the "information" or "communication". For example, ICT governance is not only about 'technology' but also ' information'.

Aims of ICT

One of the main aims of ICT is to help students to become competent and confident users wh0 can use the basic knowledge and skills acquired to assist them in their daily lives. It is also supposed to prepare students for the world of tomorrow. It aims to help learners to have an open and flexible mind. This will help them to adjust to the inevitable future changes. It will also ensure equity among all learners, as they will all have the same opportunities to use the ICT facilities in school.

Personal Objectives of ICT

ICT aims to assist students to appreciate the beauty and diversity of culture. It also aims to help students become well- cultured citizens of the modern World. ICT aims to assist students to grow personally by facilitating different methods of learning. Distance – learning programs are now provided by most colleges and universities. It also aims to allow the public to easily access the necessary information 0ver the internet.

Changing Teaching through ICT

Teachers could give many different and specific examples of how technology had change their work. A number of things were being done with websites, from giving students notes which one teacher described as a ' low end thing,' to getting students to create their own web pages. Teachers explained that technology enabled teachers to deliver more material to students and it also eliminated several basic pronlems such as poor handwriting, poor artistic skills, contrast, lighting, and visibility.

CLI-O Using ICT

Observations made in nine lessons during the first year of using laptops (2011-2012) showed a median ICT use of up to 60% of the lesson time. It should be indicated that prolonged use of the CLI-O in these classes showed that after several years, the distinction in the duration of ICT use during the lesson diminished, and after four years, the teachers became more skilled in ICT-based learning environments and used the ICT tools for different needs during the entire lesson, such that documentation of a distinction between the time devoted to use of ICT and time in which learning without ICT takes place became less relevant. An example that refers to the measurement of the median percentage of the lesson time devoted to organization of learning in lessons which take place in a ICT-based environment between 2011 and 2013.

The Research Tool

A. Percentage of using ICT in an ICT-based learning environment: The percentage of using ICT was measured by measuring the times during which the teacher employs various technological tools (interactive whiteboard and/or laptops) during the course of the lesson.
B. Organization of learning in an ICT-based learning environment: The organization of learning was characterized by measuring the times during each observation in which the class worked as a whole, in groups/pairs or individually. The time it took to organize learning was also calculated. This included for example the time it took the students to set up the technological tools (such as the laptops) for learning. This measurement was done in order to assess the amount of time "wasted" during the lesson due to the use of technology.
C. Nature of the interaction in an ICT-based learning environment: In order to understand the nature of the interaction between the teachers and the students in ICT-based lessons, the interactive

components of the lesson were measured in each lesson, as follows (based on Beauchamp & Kennewell, 2010

Conclusion

The findings obtained via the CLI-O tool indicate the different interactions that take place between the teacher and the students in ICT-based learning environments and their change over time. Use of CLI-O in conjunction with theory enables teachers, teacher educators, and researchers to implement ICT in teaching as a process of building a new pedagogy tailored to the needs of the 21st century. Therefore CLI-O can also be used as a training tool for teachers starting to teach in an ICT environment on their way of becoming a 21st century teacher. There is a need for future research using CLI-O in larger samples of classrooms using ICT alongside traditional classrooms not using ICT. Further research could contribute to deeper understanding of the learning organization and interactions taking place at different settings of ICT learning environments (e.g., different age groups and subject matters). These findings could be compared to the learning organization and interactions taking place in traditional classrooms in order to define the contribution of ICT to learning in these aspects.

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EFFECTIVE TEACHING STRTEGIES IN CURRENT EDUCATION

S. Ramalakshmi

Abstract

Teaching and learning are the two sides of a coin. The most accepted criterion for measuring good teaching is the amount of student learning that occurs. there are consistently high correlations between student's rating of the "amount learned" in the course and their overall things of the teacher and the course. Those who learned more gave their teachers higher ratings. This same criterion was also put forth by Thomas Angleo, when he said; "Teaching in the absence of learning is just talking". A teacher's effectiveness is again about student learning. The consequence of the ever more important role of knowledge for the economic an social prosperity and of the focus on the actives role of individuals in the building of his knowledge is the tendency to implement the new guidelines in the organization of the teaching process where the teaching-learning relationship is more flexible, students are encouraged to take an active role in instruction processes and the teaching outcomes must include the acquisition of knowledge but also the gaining of competences. The fact that working method and procedures, such as guided conversations, participations of student in discussions and debates, are being used on a more frequent basis indicates a positive movement in the reorganization of university teaching process. Nevertheless, our paper indicates the still predominant position of the oral lecture method and the need for a more varied usage of teaching methods and procedures enabling students to be more active and to assume greater liability in their own educational process.

Introduction

Teaching and learning are the two sides of a coin. The most accepted criterion for measuring good teaching is the amount of student learning that occurs. There are consistently high correlations between student's rating of the "amount learned" in the course and their overall things of the teacher and the course. Those who learned more gave their teachers higher ratings. This same criterion was also put forth by Thomas Angleo, when he said; "Teaching in the absence of learning is just talking". A teacher's effectiveness is again about student learning the consequence of the ever more important role of knowledge for the economic and social prosperity and of the focus on the actives role of individuals in the building of his knowledge is the tendency to implement the new guidelines in the organization of the teaching process where the teaching-learning relationship is more flexible, students are encouraged to take an active role in instruction processes and the teaching outcomes must include the acquisition of knowledge but also the gaining of competences. The goals of education defined through the learning outcomes or development of competences cannot be realized by sheer usage of traditional didactic strategies, approaches and methods, and more efficient form of teaching and learning are required. The goal of this paper is to direct the attention to strategies of teaching at the higher educational level, in particular strategies which foster active learning and acquisition not only of new knowledge but also skills and attitudes in answer to the requirements of the rapid of technological development and contemporary labour market.

Strategies of Active Teaching Must Possess the Following Characteristics

- Integrate thought and practical activities.
- Enable varied learning styles.
- Enable a methodologically correct teaching of curriculum regarding single disciplines.
- Promote cognitive interaction with the others, whether adults or peers.

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- Develop higher-level cognitive processes.
- Foster reflection and meta cognitive activity.
- Supports readiness to carry out tasks and motivation to learn.
- Enable observation and monitoring of students (e.g their pre knowledge and learning styles).

Various Effective Teaching Methods

Lecture Method

- It creates new ideas.
- it is good for large class
- The teacher is experienced and has mastery on subject, explain all points and can answer all question raised by students.
- Students can ask if they need ant clarification.
- Learn through listening.
- Teacher explains all points.
- Students give their input.
- Teacher discuss whole topic in the class in easy language so students can easily understand the topic.
- It is good for large class.
- Teacher provides all knowledge related to topic.
- Time saving as teacher is supposed to finished lecture in time.
- Student gives their views at the end of lecture. Students can ask questions if they have any problem to understand lecture.
- Student attentively listen lecture and take notes as the teacher ask questions at the end of lecture.
- Students know and understand basic concepts.
- Teachers knows all the students so he/she can use suitable strategies for the class to make them understand.
- Teacher is experienced and has mastery on subject and can answer all question by student.
- Students are more involved and participate when teacher ask question.
- Teacher provides notes.
- Students easily understand every point.
- Student share knowledge with teacher.
- Teacher is role model for student

Group Discussion

- More participation of students.
- Students listen to other's opinion and express their opinion.
- Discuss with teacher the points that were missed during discussion.
- Students learn on their own and find out key points.
- Students exchanged their ideas.
- Students get points of view of all and not only those who always speak.
- After discussion when students give their presentation, teacher corrects their mistakes.
- Students can make their own notes.
- The learning is more effective.
- Develops creativity among students.
- It evokes thinking among students.
- Students have time for preparation of topic.
- Students should have material and knowledge before discussion

- Suggestion only those student participate who have confidence rest do not participate.
- Concepts become clear after discussion.
- Every student gives his or her opinion.

Individual Presentation

- Hamm (2008) quoted Rafe; " A presentation involves motivating listeners to accept a new ideas, alter an existing opinion, or act on a given premise".
- Students first thoroughly understands the topic before giving presentation i.e. mastery on topic.
- It increases confidence among students.
- Good way to learn for only one students who is presenting.
- Students search lot of books to collect material.
- Teacher's supervision is imoratant.

Assignment

- It enhances the ability of research on any topic as the students search topic from different books, websites etc.
- active learning

Seminars

- Give chance to meet other people of same profession.
- Motivate and make student active in learning.
- Interested methods.

Workshops

- Give chance to meet other people of profession.

Conferences

- Give chance to meet other people of profession.
- Networking with other institution and professionals.

Brain Storming

- More interesting
- More informative
- Gain knowledge
- Learning is effective
- More participation of students
- Students give their opinion.
- Active learning.
- Creative thinking is encouraged.
- Students think beyond their knowledge
- Everyone gets the chance to express their thoughts.
- Simple topics can be learnt through different angles.

Role Play

- Interesting method.
- Creative thinking is encourage.
- Students think beyond their knowledge
- Students enjoy the situation.
- Active learning.
- Easy to learn.

Case Study

- Active learning.
- Creative thinking is encourage.
- Students think beyond their knowledge

Conclusion

Turbulent social processes required a flexible and dynamic education ready to change and accept the fact that it is no longer the exclusive place where information is gathered and knowledge acquired. Any demand for a change involves innovative approaches to teaching and learning as a response to the challengers set by new media and learning theories, such as cognitivism and social constructivism. An especially important role played by active teaching method and procedures which recognizes different needs of individual students, asking them to assume liability for personal learning and promoting critical thinking independent learning. The leader of these changers is the teacher who must be able to implement various different teaching methods and procedures and to alternate them strategically encouraging creativity, problem solving, experience- based learning and meta cognation

The fact that working methods and procedures such as guided conversation, participation of students in discussions and debates, or being used on a more frequent basis indicates a positive movement in the reorganization of university teaching process. Nevertheless, our paper indicates the still predominant position of the oral lecture method and the need for a more varied usage of teaching methods and procedures enabling students to be more active and to assume greater liability in their own educational process.

ICT TOOLS FOR ENGLISH LANGUAGE LEARNING

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Abstract

English language is the mirror of life. English language has become an unavoidable global language. Today, technology has become a tool for making the learner innovative and active. It is the source for motivating the learners towards learning. In this paper, we discuss about some important ICT tools that are enhancing English language learning. We also discuss about the advantages and disadvantages of the ICT tools.

Keywords: *ICT, English Language*

Introduction

English plays an important role in our daily life. In our country, there are so many regional languages in different states. English serves as a link language. English is a major medium of instruction in so many schools. There are large numbers of books that are written in English language. English is an official language in 53 countries. Many websites are available only in English. ICT helps the learners to improve their English knowledge. Today teachers use various technological tools to make their teaching innovative and effective. The word ICT includes communication devices such as computer, radio, television, mobile phones etc., Technology is a powerful tool to teach English.

Mobile Phones in Language Learning

Nowadays children are very familiar in using smart phone devices. They use the devices to enjoy playing with different apps. This technology has provided more opportunities for learning so many things.

Use of Mobile Phones in Language Learning

1. Pronunciation practice

Pronunciation is very important in speaking. The smart phones are very supportive for developing pronunciation skills of English language. The learner can record their voice and compare it with the native speakers' pronunciation, and they may practice to improve their pronunciation. The learners can use English dictionary app to increase their vocabulary and practice. The students can watch television channels such as CNN, BBC for improve their English speaking through mobile phones.

2. Capturing class notes

The learners can use mobile phones to record audio visual materials used in the classroom. This will help the learners in developing their listening, speaking, reading and writing skills.

3. Mobile games for develop critical thinking skills

In smart devices there are more apps available for learning. The apps such as crossword puzzle, vocabulary, and scrabble can improve their English knowledge with Entertainment.

4. Features of note application

'Note' application is very helpful to take notes on classroom lectures, textbook or teachers instruction notes.

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Online Facilities for Language Learning

There are lots of online facilities available in Internet for developing English language skills. They are e-tutoring, e-magazines, online teaching and training, virtual classroom classes etc. Every website has its own features.

Online Language Related Courses

Students can pursue these courses only through Internet. Some of the courses are free and some are payable. Students join in the courses and get training easily in their native place. Agencies that provide online courses are as follows, IIT, Concordia University, MOOC, NPTEL etc. Students can also watch online and offline videos at any time.

Lingua Phone

This tool is very important for language training among the learners. It is very useful for training of English language speaking skills. It offers hearing drills which are useful in developing students speaking skills.

Social Media

Social sites like Facebook, Twitter, etc., are very helpful in learning situational language. It is a platform for sharing ideas and thoughts. Blogs like English language learning groups are also available.

Radio

It is very useful for teaching and training language skills for rural area students. Many distance education programmes are broadcasted in the radio. Programmes like audio conferencing helps to develop the language skills, especially dialogues and dramas.

Some of the Best radio stations for English language learners are:

1. Tunein.com
2. BBC.co.uk
3. CBC.ca
4. Voa News.com
5. RT.com

Language Laboratory

This is a modern technological aid. There are different types of language laboratories. They are,

1. Language laboratory for listening and understanding
2. Audio active laboratory
3. Audio active comparative language lab

Films

While teaching English literature in the classroom, the teacher can show the plays of Shakespeare. Learning from films are very motivating and enjoyable. It gives a visual context to the learners.

Over Head Projector

Over Head Projector is an alternative to chalk board. Writings or pictures are projected on the screen. It saves time. Proper infrastructure is required for using such equipments.

Uses of ICT for an English Language Learner

Now the role of teacher has changed. He / She is considered as a guide and friend of the students. The teachers need to be up-to-date with the changes.

1. It is helpful for the professional development of the teachers.

2. The teachers can do various certificate programmes offering by the famous educational institutions like Cambridge University, British council etc. This will help the teacher to make their subject content easy and understandable.
3. A teacher can increase their English language with the help of e-journals and e-magazines.
4. This helps the teacher to teach in an innovative way.
5. It helps the teacher to frame English language curriculum. The teacher can study different curriculums of different countries.

Limitations of ICT tools

- The use of ICT tools needs technologically trained teachers.
- Some of the students may not actively participate in the teaching learning process.
- If the teacher uses repeated recorded items, it creates boredom. It also creates indiscipline activities in the classroom.
- Communication takes place between learners only and not with teachers.

Conclusion

In this paper we discussed about the various tools that enhance English language learning. The learners expected from the teachers that they should train them how to use and search resources through the ICT tools. ICT learning is better than the traditional learning for English language learners. ICT helps the teacher to teach English in an innovative way.

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UTILIZATION OF ONLINE PROGRAMS BY TEACHER EDUCATORS IN TEACHING – LEARNING PROCESS AT B.ED LEVEL

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Abstract

In this study aimed at identifying among others the online programs used by teacher educators in the teaching – learning process and the importance given to them, the investigators found that the teacher educators had a high level of awareness about using online programs while the female teachers utilized the online programs better.

Introduction

The status of the teacher reflects the socio-cultural ethos of a society. The government and the community should create conditions that will help teachers to have motivation and inspiration in a constructive and creative manner. Teachers should have freedom to innovate, to devise appropriate methods of communication and activities relevant to the needs and capabilities of and the concerns of the community. If quality education is to be provided, teachers should be involved in effective teaching-learning process and at the same time, they should make students involve themselves in individualized learning and facilitate creative thinking. Teachers' involvement in online programs is quite different from other learning process. Their roles are supervision and guidance. Their role is to provide a chance for learners to have independent learning experiences. Their experiences can be given to students in various online programs and activities. These programs are essential for providing effective inputs by the teacher to the students.

Need for the Study

- Since online programs are considered as the latest and most effective innovation in the field of education particularly programs for teaching learning process, the study is a needed one in the present context.
- Online programs are accessible anywhere, in any place and at any time by using Internet, therefore there is no need on the part of the learner to sit idly inside the classroom and learn curricular materials. In this way, learning autonomy is provided to the learner. Since learner centered programs are essential, the presents study is needed in the prevailing social conditions.
- This study is undertaken by the researcher who stresses the point of individualized learning which is needed for the students to improve their knowledge through internet sources; hence, it is considered as a needful one to bring change in the field of education, particularly in conducting effective teaching-learning process.
- To create awareness of online programs particularly among teacher educators.

Significance of the Study

If online programs are encouraged in our country, teachers and professors will be effectively utilized for the purpose of teaching which will be accessible to all; this ensures progress in the field of teacher education. In this way, the study is an essential one. Universities are already utilizing teleconferencing facilities which is the next step towards e-leaning and e-teaching. In order to involve teachers in online teaching and to enhance utility value in teaching, the investigator felt that the study is an essential one.

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Objectives

- To identify the online programs used by the teacher educators in the teaching-learning process.
- To identify the level of importance given by the teachers to online programs in the teaching-learning process at B.Ed level.
- To suggest some training programs for teacher educators to enhance the knowledge of using online programs for the teaching –learning process.

Hypotheses:

- The level of utilization of online programs by the teacher educators is at an average level.
- There is no significant difference in the level of utilization of online programs by the teacher educators based on
  - Gender
  - Nature of Colleges
  - Type of the School
  - Educational Qualification
  - Faculty
  - Locality
  - Community

Methodology

The investigator preferred normative survey for identifying the utility level of teacher educators using online programs in enhancing the teaching –learning process. Research tool used in the study was prepared by the investigator. The name of the tool is 'Utilization of Online Programs by Teacher Educators in Teaching – Learning Process at B.Ed Level'. The research tool has 38 items. The investigator collected data from B.Ed College Teachers at Madurai District. Percentage analysis was used to identify the level of utilization of online programs in teaching-learning.

Percentage Analysis

Table – 1 Distribution of Percentage Scores of Teacher Educators in Utilization of Online Programs in Teaching – Learning Process

S. No	Categories		Percentage (%)
1	Overall Categories		74.44
2	Gender	Male	72.65
		Female	76.00
3	Nature of Colleges	Boys	78.68
		Girls	74.86
		Co-Education	74.48
4	Type of the School	Government	71.04
		Government - Aided	78.79
5	Educational Qualification	Under Graduate	72.14
		Post Graduate	76.25
6	Faculty	Arts	73.06
		Science	76.26
7	Locality	Urban	74.48
		Rural	74.36
8	Community	Forward Community	74.45
		Backward Community	74.12
		Most Backward Community	76.80
		Schedule Community	72.41

Major Findings of the Study

- Teacher educators had high level of awareness (74.44%) about using online program in their teaching-learning process.
- The level of utilization of online programs by the female teacher educators was slightly higher than the male teacher educators.
- Teacher educators working in boys, girls and Co-education College had more or less the same level of awareness about utilization online programs in their teaching – learning process.
- The level of utilization of online program in the teaching-learning process by the government – aided College Teacher Educators was higher than the government College Teacher Educators.
- The level of utilization of online programs by the postgraduate degree holders was slightly higher than the undergraduate degree holders.
- The level of utilization of online programs by the Science subject Teacher Educators was slightly higher than the Arts Subject Teacher Educators.
- The level of utilization of online programs by the rural and urban Teacher Educators was found at the same level.
- The level of utilization of online programs by the Teacher Educators belonging to the most backward community was slightly higher than the other categories of community groups.

Suggestions for Improving Utilization of Online Programs

- Teacher Educators should know the facilities that are available through Internet.
- Teacher Educators not familiar with online programs must undergo special training programs.
- Though there are good and stable software materials available in the field of online programs, attempts may be made by the teacher educators to fulfill the needs of teaching –learning process in the best possible manner.

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AWARENESS OF ICT AMONG TEACHER EDUCATORS

A.Vences Cyril

Abstract

ICT means as the implementation of different branches of technology in IC processing, in a broader sense, ICT is taken to refer to the whole of enabling technology concerned with communication, manipulation of information (hardware and software) networking, data storage, transmission - encompassing data, voice and video. Almost a century ago a spate of inventions ushered in the first industrial evaluation within a short span of time many countries became industrialized. The growing use of ICT as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process. As we live in the world of competition we need to acquire adequate knowledge about computer and it uses in the field of education. Teacher educators should have greater access to ICT as to disseminate the knowledge to all those they come in contact with this is their primary responsibility. The research was a survey type, which consists of purposive sampling of 55teacher educators in Dindigul district. The author had prepared and validated the ICT awareness scale, Personal data sheet was prepared by the investigator. The interpretation of data was done with statistical methods in percentage analysis, mean, standard deviation, 't'-test.

Keywords: *ICT and Teacher Educators*

Introduction

ICT has become a part of education. This ICT generally relates to those technologies that are used for accessing, gathering manipulating and presenting or communicating information. The technologies could include hardware and software applications and connectivity. According to UNESCO: ICT can be considered as the scientific, technological and engineering disciplines and the management techniques used in information handing and processing their application, computers and their inter action with men and machines and associate social, economical and cultural matters. From educational prospective the computers deal with data, information and knowledge. Here the word data refers to facts or propositions or single, differentiated units. Data are raw material of experience and are usually listed or tabled in some straight forward way (Adebowale, 2012).

Significance of the Study

Education is a process of human enlightment and empowerment for the achievement of a better and higher quality of life. Teaching is an ever changing profession. The field of education is expanding each year as advancement is made in technology and brain based research. To keep pace with the changing world, teachers must have current knowledge and skills of educational technology. Just as technology is influencing and supporting what is being learned in schools and universities, so too is it supporting changes to the way students are learning. Moves from content-centered curricula to competency-based curricula are associated with moves away from teacher-centered forms of delivery to student-centered forms. Through technology-facilitated approaches, contemporary learning settings now encourage students to take responsibility for their own learning (Singh & Pachuri, 2012). The growing use of ICT as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process. As we live in the world of competition we need to acquire adequate knowledge about computer and it uses in the field of education.

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Teacher educators should have greater access to ICT as to disseminate the knowledge to all those they come in contact with this is their primary responsibility. So that the investigator curious to study the awareness of ICT among teacher educators.

Objectives

1. To find out the level of ICT among teacher educator with regard to their marital status and job status.
2. To find out whether there is any significant difference in ICT of teacher educators with regard to their marital status.
3. To find out whether there is any significant difference in ICT of teacher educators with regard to their job status.

Hypotheses

H_o1: There is no significant difference between married and unmarried teacher educators in their ICT.

H_o2: There is no significant difference between permanent and temporary job teacher educators in their ICT.

Delimitation of the Study

1. The study is limited to teacher educators in Dindigul district only.
2. The investigator has proposed to choose only 55 teacher educators as sample for the study.

Method Used

The investigator has adopted survey method in this study to find out the "Awareness of ICT among Teacher Educators".

Population and Sample

The population of the present study consists of teacher educators those who are working in B.Ed., colleges of Dindigul district, Tamilnadu. The investigator has used simple random sampling technique for selecting the sample from the population. The sample consists of 55 teacher educators. Among them 29 were male and 26 were female teacher educators.

Tool Used

This study is aims to evaluate the awareness of ICT among teacher educators. The investigator constructed and validated the Awareness of ICT Scale.

Statistics Techniques Used

Percentage analysis, Mean, SD and 't' test were used in this study.

Analysis of Data

Table 1 Level of ICT among Teacher Educator with regard to their Marital Status and Job Status

Background Variables	Category	ICT Total					
		Low		Moderate		High	
		Count	%	Count	%	Count	%
Marital Status	Married	9	20.9	27	62.8	7	16.3
	Unmarried	1	8.3	9	75.0	2	16.7
Job Status	Permanent	1	8.3	8	66.7	3	25.0
	Temporary	9	20.9	28	65.1	6	14.0

Table 2 Difference between Married and Unmarried Teacher Educators in their ICT

Variable	Marital Status	N	Mean	S.D	'P' value	Remarks
ICT in Total	Married	43	49.72	7.252	0.018	**S**
	Unmarried	12	51.33	5.228		

Table 3 Difference between Permanent and Temporary Teacher Educators in their ICT

Variable	Job Status	N	Mean	S.D	'P' value	Remarks
ICT in Total	Permanent	12	51.50	9.279	0.814	**NS**
	Temporary	43	49.67	6.086		

Results and Discussion

- The table 1 reveals that the level of awareness of ICT among teacher educators with regards to their marital status and job status. In this level 16.3% of married and 16.7% unmarried teacher educators have high in their awareness of ICT, 62.8% of married and 75.0% unmarried teacher educators have moderate in their awareness of ICT, 20.9% of married and 8.3% unmarried teacher educators have low in their awareness of ICT. And in this level 25.0% of permanent and 14.0% temporary teacher educators have high in their awareness of ICT, 66.7% of permanent and 65.1% temporary teacher educators have moderate in their awareness of ICT, 8.3% of permanent and 20.9% temporary teacher educators have low in their awareness of ICT.
- The table 2 reveals that there is significant difference between married and unmarried teacher educators in their awareness of ICT. While comparing their mean scores the unmarried (51.33) teacher educators are better than the married (49.72) teacher educators. This may due to the fact that the unmarried teachers have less burden their family life. So that they can easily access their technology in their home itself. It may help them to have more ICT awareness.
- The table 3 reveals that there is no significant difference between permanent and temporary teacher educators in their awareness of ICT.

Conclusion

Encourage technology integration among the trainees, colleagues and teacher educators. Teacher educators must become active, competent online user of telecommunication services and model the use of Internet as an instructional tool. Use information literacy to access, evaluate and use information from a variety of sources. The teacher educators must be up to date with the latest technological developments and advise the institutions concerning technology advancements and up gradation. The awareness of ICT is necessary in the 21st century teacher educators since the conservative modes of teaching learning will not serve the purpose. There is no doubt that ICT based teaching learning process will enhance the outcome of education.

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ICT ON EDUCATION: ANDRIOD APPLICATIONS FOR CLASSROOM TEACHING

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Abstract

The developments in the use of the electronic media have influenced all walks of life. Education is no exception to this. The use of computers and the internet for enhancing the quality of education by making learning more relevant to life has been seen as an ideal by educational institutions. The citizens of tomorrow who are our students now are going to live in the age of the electronic media. Educational software is computer software, the primary purpose of which is teaching or self-learning. Now that technology is becoming more present in the classroom the following Andriod apps are perfect for the classroom and will surely equip teachers with a few tricks. . Many would say as well that the quality and effectiveness of learning is enhanced many times through the use of ICTs. This paper presents some of the latest educational software that can be used in the classroom for teaching, which creates an effectual classroom environment.

Introduction

"ICT" is the Information and Communication Technologies. "ICT in Education" means "Teaching and Learning with ICT".

As information and communication technology (ICT) plays a greater role across society including public and private education, countries around the world are more than ever in need of high quality internationally comparable statistics on ICT in education. Information and communication technology (ICT) has the potential to transform teaching and learning processes. Information and communication technologies (ICT) are simply technologies arising from scientific and technological progress in computer sciences, electronics and telecommunications. They enable us to process, store, retrieve and disseminate valuable information in text, sound and video form. In an increasing interconnected world, brought about by the application of technological advances to all sectors of society, quality education necessitates active and innovative exploration to maximize the benefits of ICT and develop and maintain the partnerships that use of ICT in education requires. Now that technology is becoming more present in the classroom ,the following Andriod apps are perfect for the classroom and will surely equip teachers with a few tricks. We know that technology changes rapidly and newer, more cost effective and more powerful technologies will continue to emerge of potential use in education.

Improving the Quality of Learning by ICT

One of the most powerful reasons for considering using ICTs in an educational system is that they put learning in the hands of the user. They facilitate individualizing curriculum, permit learners to dictate the pace of learning, and widen sources of information. ICTs also promote active learning and allow for interaction between and among peers and mentors. Many would say as well that the quality and effectiveness of learning is enhanced many times through the use of ICTs. The technologies allow faculty to incorporate new information and update learning materials, and they enable immediate and rapid transfer of information pertaining to the administration of a course or program of study.

Types of Software

The term 'software' refers to the set of electronic program instructions or data a computer processor reads in order to perform a task or operation. In contrast, the term 'hardware' refers to the physical components that you can see and touch, such as the computer hard drive, mouse, and keyboard.

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There are two main types of software: systems software and application software. Systems software includes the programs that are dedicated to managing the computer itself, such as the operating system, file management utilities, and disk operating system (DOS) Systems Software The operating system manages the computer hardware resources in addition to applications and data. Without systems software installed in our computers we would have to type the instructions for everything we wanted the computer to do! Educational software is a computer software, the primary purpose of which is teaching or self-learning.

Android (Operating System)

Android is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. In addition to touch screen devices, Google has further developed Android TV for televisions, Android Auto for cars and Android Wear for wrist watches, each with a specialized user interface. Variants of Android are also used on notebooks, game consoles, digital cameras, and other electronics

Android Applications for Classroom Teaching

It is applicable to our education field which gives a gateway for an challenging and intellectual classroom environment.

Educational Software and Mobile Applications for Class Room Teaching

- GeoGebra, PhotoMath, Camtasia, Phet, Hot Potato, PhotoStory, ePathshala, NHM Writer Software
- Social Media (Whatsapp, Facebook), Mail, G Drive,

Free Evolutional Applications

- Sellinam, 3d / 4d Applications, Tnschools Live, Maths Tricks, QR Code, Share IT, Skype & etc.,

Let us view some of the latest educational software which creates an effectual classroom environment. Such us NHM Writer, Sellinam, Camtasia, Geogebra, Photo math, Organs 3-D Software, Animal 4-D Application.

1) NHM Writer – (BEST) Free Tamil Typing Software for PC

NHM Writer is wonderful software from New Horizon Media that helps to type in Tamil and other 9 Indian regional languages on computer. We can type anywhere in computer applications or web browsers. It enables us to support to read and write in the following languages. It is a cool one, so we need not to install any other language packages.

NHM Writer Features

- We can read and write and type in 10 Indian languages such as Assamese, Bengali, Gujarati, Hindi, Kannada, Malayalam, Marathi, Punjabi, Sanskrit, and Tamil & Telugu.
- Good transliteration service - We can type in English and it will translate to Tamil or above our own language
- Works with all browsers so we can type in online and all computer applications.
- We can easily toggle English and our language by pressing a key.
- It enables Regional language support without Windows CD
- Key preview and on-screen keyboard for beginners to learn typing.
- We can extend the languages by including new keyboard encodings via adding xml file.
- We can customize existing key map files to your need
- NHM Writer Works with Windows XP, Windows 2003, Windows 7 and Windows 8.
- Freeware with size less than 1 MB.

2) Sellinam Software

Sellinam 4 is a completely new version that supports Lollipop (Android 5.). In addition to the Tamil99 Mobile and Anjal keyboards, it includes a Bahasa Malaysia (Malay) keyboard and improved support for English. Major new features include next word prediction, word correction, spelling correction, user-dictionary, short-cuts and many others. Also introduced in this version is Sellinam WordSync that lets users sync Tamil words from the personal dictionary across their other devices.

3) Camtasia Software

Camtasia is a powerful software application that enable us to create professional-looking videos. It's easy to use, with plenty of intuitive features that make the production of stunning visuals quick and easy. Camtasia provides the user with enough powerful features to create and edit the very best videos. With the ability to import audio and video, any of our existing media can be brought onboard and entered into the creative process. By simply drag-and-dropping various icons, shapes, texts, or clips, We can have complete creative control over our project. There are a selection of animated backgrounds available to use, enabling the production of training, educational, or marketing videos.

4) Geogebra Software

GeoGebra is a free dynamic mathematics software package used by teachers of mathematics in classrooms across the world. It joins geometry, algebra, tables, graphing, statistics and calculus in one easy-to-use package. It has won several educational software awards across the globe.eme. This software GeoGebra can be helpful in teaching mathematics. GeoGebra is an interactive geometry, algebra, statistics and calculus application, intended for learning and teaching mathematics and science from primary school to university level. It can be used for active and problem oriented teaching and fosters mathematical experiments and discoveries both in classroom and at home. We conclude that all students, from any level of mathematical knowledge can be encouraged to study mathematics by using this application. Current trends in the teaching of science call for the use of visualization techniques, and GeoGebra fits perfectly to this trend.s of It is freely available for online installation from www.geogebra.org/webstart or downloadable for local installation at www.geogebra.org. Examples at www.geogebra.org/book/intro-en.zip and at the wiki www.geogebra.org/en/wiki.

5) Photomath Software

Simply point your camera toward a math problem and Photomath will magically show the result with detailed step-by-step instructions.

Photomath Provides

- Camera calculator
- Handwriting recognition (NEW)
- Step-by-step instructions
- Smart calculator

Use Photomath+ for more powerful features:

- Complete step-by-step instructions
- Colorful explanations
- Extra math knowledge

6) Organs 3-D Software

It shows a three-dimensional model of the human body organs and a description of all of them. This application is intended to complement the study of anatomy in medicine, biology or other. Touching each organ as the heart, brain, lungs, reproductive system, liver, intestine, ovary, testis, stomach, kidney, etc. information is displayed.

7) 4D Animation and Virtual Environment in Classroom

4D Animation:

'Animal 4D+' that helps to see animals in Augmented Reality. 4D images of animals like lions, elephants, giraffes etc can be created. Animals emerge, make sounds and rotate 360 degrees - giving a visual treat to students. We can try similar apps for solar system, dinosanours, human anatomy, workers, etc.

Teaching with Virtual Reality Headsets:

We also used the Virtual Reality Headset. It is nothing but Google Glass. When we wear this glass, we can see videos as if seeing it right in front of us.(real time experience). It can convert 2D videos to 3D videos. It is very useful for teaching topics like the universe, solar system, satellites, etc. We can use it for teaching about wild animals and underwater creatures. By which the students will be able to understand the concepts and enjoy the experience.

Three main advantages of ICT tools for Education

- Through ICT, images can easily be used in teaching and improving the retentive memory of students.
- Through ICT, teachers can easily explain complex instructions and ensure students comprehension.
- Through ICT, teachers are able to create interactive classes and make the lessons more enjoyable, which could improve student attendance and concentration.

Three main disadvantages of ICT tools for Education

- Setting up the devices can be very troublesome.
- Too expensive to afford
- Hard for teachers to use with a lack of experience using ICT tools.

Conclusion

ICT has the potential to make learning more experiential. Moreover the large amount of data, visuals available on any topic can be brought to the classroom from all over the world. That is why ICT has been considered an emerging area with lots of potential for making educational process more meaningful. Thus information and communications technologies (ICT) in education reflects and responds to present and future needs of people functioning in an intensely changing and challenging intellectual environment. ICT, when appropriately used, can serve as a vehicle and a platform for meaningful educational reform geared towards a shift from didactic “instructionism” to constructivism. Integrating ICT into education seems to be a necessary issue for educators / education administrators in the world. Educational ICT tools are not for making educators master ICT skills themselves, but for making educators create a more effective learning environment via ICT.

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SMART CLASS - WHITE BOARD E-EVOLUTION IN EDUCATION

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Abstract

Smart Class is a Smart concept for Smart Educators of Smart Schools. "Smart Class" includes Smart Learning Techniques, Smart classroom management, Smart Learning environment and Smart Learning Materials. Internet, projector and other multimedia devices are the main parts of smart classrooms. We can say smart class as "White board classrooms". Now blackboard and chalks is replacing by white board, projectors and the pointer. Really it is an amazing than traditional teaching learning system. Smart class is a class of modern age. There will be fully multimedia enabled audio-visual classrooms in a smart classroom. It will be quite different than traditional class. In a smart classroom the teacher works as a facilitator in learning. Interactive smart board technology will be included in the curriculum of pre-service teachers. In-service training and refresher courses will be conducted for teacher educators; they will mentor the pre-service teachers. Implementing smart class in Government Schools will increase the strength of students. Entertaining technologies of students applied in the field of education brings enthusiastic participation of students in teaching learning process.

It Includes

- *Introduction*
- *Objectives*
- *Principles*
- *Layout*
- *Advantages and Disadvantages of Smart Class*
- *Conclusion*

Introduction

This upgraded kind of education is very interesting for children! It is an innovative idea to change our boring system into a smart and innovative system of teaching-learning activities. Smart Class is a Smart concept for Smart Educators of Smart Schools. "Smart Class" includes Smart Learning Techniques, Smart classroom management, Smart Learning environment and Smart Learning Materials. Internet, projector and other multimedia devices are the main parts of smart classrooms. We can say smart class as "White board classrooms". Now blackboard and chalks is replacing by white board, projectors and the pointer. Really it is an amazing than traditional teaching learning system. Smart class is a class of modern age. There will be fully multimedia enabled audio-visual classrooms in a smart classroom. It will be quite different than traditional class. In a smart classroom the teacher works as a facilitator in learning.

Objectives of Smart Class Room

The following are some objectives for a Smart Class Room application:

- To help teachers to meet new challenges and developing students' abilities and performance.
- To enables teachers to access multimedia content and information that can be used for teaching students more effectively. Pedagogically sound and visually rich curriculum resources.
- To enables teachers to express their views and ensures that every child is understanding the undertaken concept which ultimately affects his achievement.
- To make possible for the concepts to be understood clearly. To makes abstract concept real.
- To have interactive and live teaching to elaborate and compare different objects and perceptions towards the particular concepts

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- To designed a module of smart class which allows a student to visualize the concept much better than static images. Visuals and animations that students will never forget.
- To move a step towards development where students' achievement is highlighted.
- To makes learning an enjoyable experience for students. Activities and games to make learning process easy.
- To make effective blending of technology with the classroom, and to Inform the teachers of classroom events
- To instruct simultaneously remote and local students.
- To improve creative thinking in learning process to visualize the concepts and practices with model and demonstrations.
- To optimize the use of e-resources wise e-books, e-journals, protocols, lecture notes, documentaries and so on.
- To customized content as per the school's scheme of work and to provide facility to update the content.

Principles Inherent in Smart Class Room

The following are the principles for smart classrooms in terms of arrangement and pedagogical configuration which we have established as widely generalizable and which should be considered in order to transform any formal learning space in smart classroom.

Principle of Adaptability

From the idea that every teacher and every class is different, and that space can be adapted to their needs, the concept of smart classrooms includes the principle of adaptability to the type and needs of teacher and of each student.

Principle of Connectivity

The concept of connectivity has a twofold character. On one hand it is required that the learning space has a good network connectivity, both local and global, to use to the most the potential of mobile devices. Connectivity should be wireless, and this is fundamental to maximize physical mobility around the space and comfort in using technology. On the other hand, beyond digital connectivity there exists social and informational connectivity. Through networks, students live connected to teachers, friends, family, professionals and to a large number of information sources, both in their immediate surrounding and from distant places.

Principle of Comfort

Under this principle, elements which enable this well-being should be included in the learning space for the various tasks to be done for learning, such as couches, pillows, rugs and carpets, comfortable chairs. A smart classroom is a place arranged to comfortably do various activities –reading, watching videos, playing, listening to music and audios, writing, talking, debating, experimentation, and so on.

Principle of Flexibility of Physical Arrangement

The arrangement of a smart classroom and its elements is such that it allows agile and easy variations in activities, that is, make it possible to change student grouping, the type of resources being used, use of various types of resources at the same time, ICT and non-ICT, for different students to carry out different tasks, e.g. searching information, discussing, watching a video, etc. The classrooms are supplied with varied furniture elements to achieve flexibility of space arrangement.

Principle of Multiplicity

This principle refers to smart classrooms having features which enable the use of various types of resources and stimuli. While teaching and learning, the arrangement enable possibilities for creativity,

reasoning, logical thinking, etc., and be adapted as close as possible to learners' various needs and learning styles.

Principle of Order / Organization

This is an important principle, even though it is not easy to design, and attain, sustainable placing, storing, arrangement and rules of use of spaces and resources available. For this reason teachers carefully consider the order and arrangement of spaces and resources so that these are the most adequate for the learning activities that will take place in their smart classroom.

Principle of Openness

This principle relates to the false and rooted belief that learning takes place only in the formal space in the traditional classroom, where the teacher presents information and gives a lesson in a transmissive way. Learning takes place beyond the classroom space, both physically and virtually, and therefore activities put forward for smart classrooms should consider these extended learning places and learning times in order to learn beyond the classroom and the class times traditionally assigned.

Principle of Personalization

Smart classrooms allow students and teachers to personalize their environment according to their likes and needs. A space which progressively teacher and students should make their own, personalizing it by means of activities which support and reinforce learning.

Principle of Safety / Security

Smart classrooms have an arrangement which prevents users from having physical accidents and will also be safe in terms of access to information and communication on the Internet from the classroom. Therefore security systems will be taken into account when conceptualizing and designing smart classrooms. In sum, the arrangement, structure, methodologies and principles of smart classrooms intend that learning experience be as likely as people's learning ways, preferences and styles, in a natural way and in a personal space; all this through active participation, experimentation, collaboration, solidarity, rapport, creativity, leadership, and so on.

The Layout of Smart Classroom

The Smart Classroom is physically built in a separate room of Pervasive Computing Lab in which several video cameras, microphone arrays are installed in it to sense human's gesture, motion and utterance. According to the characteristic of invisibility in pervasive computing environment, it deliberately removed all the computers out of sight. Two wall-sized projector displays are mounted on two vertically crossed walls. According to their purposes, they are called "Media Board" and "Student Board" separately. The Media Board is used for lecturer's use as a blackboard, on which prepared electronic courseware and lecturers' annotation are displayed. The Student Board is used for displaying the status and information of remote students, who are part of the class via Internet.

The classroom is divided into two areas, complying with the real world classroom's model. One is the teaching area, where is close to the two boards and usually dominated by lecturer. The other is the audience area, where is the place for local students. Complying with the philosophy of Natural and Augmented. Natural means obeying real-world model of classroom as much as possible to provide lecturer and students the feeling of reality and familiarity, which leads to the existence of local students. Augmented means trying to extend is the reason for remote student.

Advantages of Smart Boards in Classroom

1. **Provides Flexibility**: Interactive whiteboards allow many different forms of media – including photos, illustrations, maps, graphs, games, and video, to be displayed. These tools not only enrich the classroom experience but also help to expand the nature of content that can be used in learning. In

addition, SMART Boards makes learning to be more dynamic owing to the different forms of presenting information.

2. **Enhanced teaching/learning experience**: SMART Boards provide new ways for teachers to teach, and student to learn. These tools support a wide variety of learning styles. For instance, visual learners can watch as their tutors use the whiteboards to project visual elements, whereas audio learners can listen and have discussions. On the other hand, the Boards come with touch screen capabilities that allow tactile learners to touch and interact with the board.
3. **Interact and share**: The interactive nature of SMART boards offers learners an opportunity to share and participate in the instructional process. Interactivity provides a platform for students to demonstrate their grasp of the subject through touching, drawing, and writing. Every learner has an opportunity to participate or contribute to the presentation and/or discussion via notebooks and tablets. In addition, the boards provide for rapid assessment whereby learners can receive immediate feedback. Teachers and students are able to identify individual strengths and weaknesses in various subject areas and isolate areas/topics that need more focus or review.
4. **Low-Maintenance**: SMART Boards are neat and easy to use. There are no hassles cleaning or maintaining whiteboards. The data on the screen can be modified using a specialized highlighting tool or pen. There is no need for using unhygienic chalk or marker pens.
5. **Access to online information & tools**: SMART boards allow learners to easily access a rich database of online resources. Teachers can use the wide variety of online information sources such as knowledge databases, online video and news items to reinforce their lessons. Learners can also quickly access the wide range of powerful tools and resources to conduct research and supplement their usual study material
6. **Going Green**: Interactive boards are also environmentally friendly. They offer teachers an entirely different way of presenting information to students, which eliminates the need for writing, printing or photocopying. Which, contribute to eliminate waste and pollution, from over-utilization of paper and ink.
7. **Technology Integration**: SMART boards allows for integration of various technologies in order to improve the learning experience. For instance, it is possible to attach tools such as microscopes, document cameras, cameras or video cameras to a whiteboard to aid in instruction. It is also possible to integrate the interactive learning tools with a wide range of software applications.
8. **Communication**: Interactive whiteboards allow for connectivity in different locations; making ideal collaboration and distance learning environments. When using SMART boards, student show to increase student-to-student collaboration and increase overall participation in the lesson.
9. **Improving classroom management**

   Smart Board uses in the classroom at the elementary level increasingly are including management start-of-day routines such as taking attendance and lunch count. For example, before class every day, a first grade teacher may post large, colorful icons marked with individual student names. The board may also show pictures of the day's lunch choices. Then, instead of waiting for roll call and lunch count or checking in on a magnet board or pocket chart, the students use their fingers to guide their icons to their lunch choices. The teacher views the class and the board to see if the record keeping is complete. Then she can report the attendance and lunch counts. This process also helps young students become comfortable with the touch process that is becoming so important in using Wi-Fi digital tools, such as the computer notepads and e-readers that some schools are adopting for instructional use.
10. **Minimizing the need for eyes at the back of the head**

    Teachers often jokingly say that it takes a few years to develop "eyes" at the back of their heads so they can detect misbehavior when facing away from students. SMART Boards change classroom management by minimizing the amount of time teachers need to turn their back to the class to write on dry-erase whiteboards or chalkboards.

By connecting a computer to a SMART Board, a teacher can stand face forward and attract student attention to a particular topic by sharing PowerPoint presentations, software lessons or interactive websites with the entire class at one sitting. This occurs before students begin small group or independent work on the same topic.

11. Providing academic & digital learning

During SMART Board lessons, teachers may also help students gain digital and presentation skills by taking turns manipulating the equipment. Think of this practice as the Digital Age equivalent of going up to the blackboard to solve a problem. Smart Board uses in the classroom may include teaching various lessons. Examples include:

- Fourth grade fractions made more comprehensible by viewing the movement of virtual tools, such as pictures of cubes, pie graphs and other objects.
- Civil War history for middle school students, who enrich textbook learning by taking a fictional tour of the Underground Railroad in which the class makes choices and sees where those decisions lead.
- Virtual dissection of a frog in high school biology.

12. Building motion into kindergarten lessons

Young children have short attention spans and respond better to instruction if it includes movement and hands-on action, such as getting up to answer a question or demonstrating how to use a tool. As one kid-favorite song says, they "like to move it, move it."The Australian journal Teaching Science notes that kindergarten students enjoy touching SMART Boards to answer questions and participate in lessons. They also respond well to the colorful graphics that are much easier for a large group to view on a large screen. Using electronic pens to circle items or moving virtual objects with their fingers, kindergarten students can sort items on a SMART Board to show what they know about a particular subject. For example, they might be asked to separate objects that need electricity from those that don't.

13. Clicking here to show what you know

At upper elementary and higher grade levels, teachers may ask students to demonstrate their knowledge by taking multiple choice tests with the help of SMART Boards. They may also participate in interactive test review before the final test near the conclusion of a learning unit. If a school has the right software and equipment, students may even respond to questions on the screen by using individual, handheld remote clickers that record their answers for later review and grading by the teacher.

Disadvantages

Like any other technology, Smart Boards also have disadvantages. First, Smart Boards are very expensive. The cost of the actual board, the software, projector, and installation fees are very high; approximately $1000, but can vary depending on model and year. For school districts, such a rural school and smaller schools that already have low funding; this can be a problem as they do not have as much access to such technology. Because of the high cost, if a school district is able to purchase this technology, the school may only be able to afford one or two. That means that not every teacher will have access to the Smart Board. Even if a portable Smart Board on wheels is purchased, teachers still would have to check out the Smart Board for use in their classroom. Not all students would have access to this technology. Also, teachers need to be trained to use this new technology. The software can be challenging to learn and practice is often needed to become an expert. A lot of time and money needs to be invested into the training process. Another downfall of Smart Board technology is that most Smart Board specialist comes from outside the school district. Teachers do not have easy access to someone with the knowledge and questions cannot be answered right away. Also, some teachers may pick up the information quickly, whereas others may need additional training or support before they feel comfortable incorporating the Smart Board into their classroom. For these teachers, the new technology may be too overwhelming and

cause disruptions and frustrations in the classroom due to lack of proper training. The technology would then be only a hindrance rather than a help in the classroom.

Another disadvantage of Smart Boards is that they require maintenance. Like other electronic equipment, Smart Boards also need to be kept working properly and installed with the proper updates. Most of the time teachers are the ones that need to find the time and download these updates, which may cause a problem. This may require additional technology assistants to be hired to help with problems that arise with the Smart Board and also keep the Smart Board updated.

Smart Boards can also be a problem if they are not working correctly on a given day. A teacher would always need to have a back-up lesson plan or activity in case the technology crashes. Additional time would need to be put into planning each day for the teacher.

Conclusion

Proper use of Technology in the hands of smart creative teacher makes teaching learning effective. Interactive smart board technology will be included in the curriculum of pre-service teachers. In-service training and refresher courses will be conducted for teacher educators; they will mentor the pre-service teachers. Implementing smart class in Government Schools will increase the strength of students. Entertaining technologies of students applied in the field of education brings enthusiastic participation of students in teaching learning process.

RELATIONSHIP BETWEEN ICT AND EDUCATION-ICT A BOON FOR TEACHING

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Abstract

Information and communication technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. Many countries now understand the importance of ICT and mastering the basic skills and concepts of as part of the core of education. Organizations, experts and practitioners in the education sector increasingly recognizing the importance of ICT in supporting educational improvement and reform. This paper addresses the relation between of ICT and education. When two technologies are converging to each other, together they will generate some great opportunities and challenges. This paper focuses on these issues. In introduction section it explains the ICT, education and ICT enhanced education. In next section it describes need of ICT in education, relationship between ICT skills and education and stages of teaching learning process. The next two sections describe opportunities and challenges in integrating ICT in education. Finally the concluding section summaries the idea and its usefulness.

Keywords: *Education, Information and Communication Technology, Learning, Teaching.*

Introduction

The use of information and communication technologies in education makes teaching – learning process effective and interesting. To know the impact of ICT in education, we need to know two basic things: ICT and education. The Information and Communication Technologies(ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software , satellite system and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. Education encompasses teaching and learning specific skills and also something less tangible but more profound: the imparting of knowledge, positive judgment and well-developed wisdom. Education means 'to draw out' facilitating realization of self-potential and latent talents of an individual.

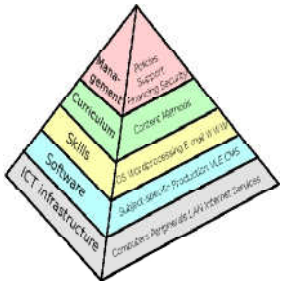
Effective Uses of ICT

The benefits of ICT features in classroom instruction are summarized below:

- ICT literacy
- Improves efficiency both in teaching and learning
- Increases motivation
- Paves way for personality development
- Active participation of the students
- Self-paced learning
- Very flexible and rich medium for students to access the information
- Better learning, retention and student performance
- Multi-sensory learning experience.

The Role of ICT in Education

Presently there are four areas of education namely: Teaching, Curriculum and Educational program. Information Communication Technology has been added essentially in the 21st Century as the fifth potent area of education.



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According to the Revised Draft on National Policy on Information Communication Technology in School Education (prepared by the Department of School Education Literacy, MHRD in 201

Modernization and ICT

E- Learning Strategy

Six Offline Components	Six Online Components
1.Workplace learning	1. Online learning Content
2. Face- to- face tutoring	2. E- tutoring
3. Classroom	3. Online collaborative Learning
4. Distributable Print Media	4. Online Knowledge Management
5. Distributable Electronic Media	5. The Web
6. Broad Cast Media	6. Mobile Learning

E-learning suits to the somato - sensory needs of human brain as it is able to keep the learner attentive and significantly enhances perception.

It increases the level of participation and interaction.

It helps to stop, reflect, repeat and integrate the learning.

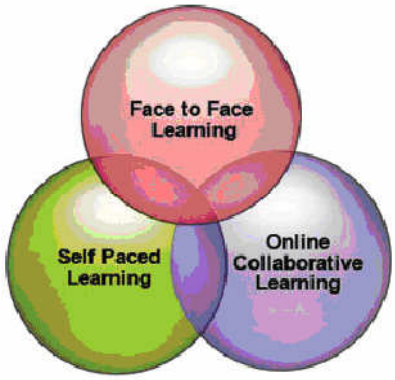
Speeds up learning, enhances retention.

Helps in better self- appraisal, gives greater degree of control and autonomy to the learner.

Helps in intelligent tutoring and makes learning meaningful.

ICT Literacy

"ICT literacy means the use of digital technology, communication tools, and/ or networks to access, manage, integrate, evaluate and create information in order to function in a knowledge society". ICT represent a set of skills and knowledge that suggests increasing cognitive complexity.



Multimedia in Schools

Multimedia for learning takes many forms through showing the cartoon on particular subject. Multimedia for reading skills grows through word recognition a mouse clicks on any word play in back. An interesting uses of multimedia in schools involve the students themselves. Students put together interactive magazines and newspaper, they make original art using image-editing tool, they interview students and towns people and coaches and teachers and they make quick time movie. Many computer games with the focus on the education are available.

Interactive White Board

Although the first interactive whiteboard was released in 1991, only in the last several years have whiteboards become a must have tool in K-12 classrooms. An interactive whiteboard combines a dry erase whiteboard with an LCD projector and is usually mounted on a wall or floor stand. Powered by easy-to-use software, the whiteboard becomes the computer screen viewable by an entire classroom. The projector projects the content from the computer onto the surface of the board while the teacher controls the content either with a pointer or the touch of the hand instead of a keyboard and a mouse. The combination of software with the projector results in much more than simply a projected image.

Classroom applications for using interactive white boards include:

- Multimedia lessons and presentations including audio and video.
- Collaborative problem solving
- Show casing student projects and presentations
- Virtual field trips

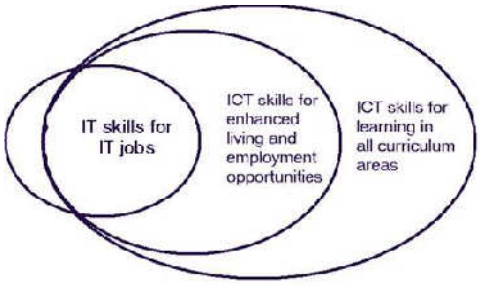
- Recorded lessons that can be used by substitute teachers.
- Documentation of student achievement.

E-INSTRUCTION's newest product offering, inter write workspace includes more than 4000 digital, k-20 teaching resources from math to language arts and science. Publisher – independent, Inter-write Workspace includes 50 tools to create, display, organize, record and share teaching materials.

Interactive Distance Learning

Interactive Distance Learning (IDL) refers to a portfolio of application and networking solutions that can be (and are being) implemented by universities, K-12 schools, corporations and government agencies the education and research process. Information highways are high speed data networks used to transport information and link people who want to be connected with others. Tele-text and video-text are the two new information age services that will soon be widespread among home and business users. Tele-text is a one-way service in which pages of information from a central database are broadcast on a regular television signal. Video-text is a more sophisticated two-way service using telephone lines.

Relation of Distance Education with ICT



Distance education, at the primary school level, the use of radio has been a low-cost and consistently effective means to improve quality in subjects taught in primary schools. Television and computer based technology, because of their higher cost per student, are more often found at higher levels. At the secondary level, pilot projects utilizing ICTs have begun in some countries as a means of improving quality. Tertiary education options are increasingly designed with computers and Internet linkages in mind.

Model of Stages of Teaching and Learning Using ICT

Stage 1 Discovering ICT tools
Stage 2 Learning how to use ICT tools
Stage 3 Understanding how and when to use ICT tools to achieve particular purposes
Stage 4 Specializing in the use of ICT tools

On-Line Chat Seminars

The CHAT seminars were held at a regular time prior to the face to face sessions in order to discuss issues arising out of students' reading of set papers. These evening seminars were tutor- led and content oriented. The aim was to provide a reflective and critical forum for discussion in which all students were encouraged to participate.

Net Chat Communication

In Computer Based Training (CBT) and especially Web Based Training (WBT) environments such as virtual universities – the communication between the students and the professors as well as between the students among themselves is very important. The Eden Hypertext system formerly known as Net Author Environment to provide extra functionally to both the author and the reader of Web based educational hypertexts. Net Chat is a web- component designed for educational purpose. It can be used on any web page in the internet for any purpose the author of the page thinks it is useful for. A student can join any channel he wants to and take part in the ongoing discussion or class. If the chat room provides some accessible technical equipment the student is free to use it to express his ideas or to formulate a question. Each system user is also free to create his own chat room and become a channel owner, who specifies the settings for this channel. A channel owner has the right to define the technical equipment of the chat room. The access permissions to the equipment is granted by the channel owner to the other students. If all students have joined the class room and the channel owner (e.g. professor) does not want

to be disturbed by other students who frequently drop in by accident, he can lock the chat room. The communication within each open channel is logged by the server, so that students, who enter this channel at a later point of time, are enabled to first check what the ongoing discussion is about and what already had been discussed, before actively joining the talk.

Webquest

A Web Quest is an activity of guided inquiry in which learners are given a task which requires internet access to complete. Web Quest can be designed as short or long term activities. At the end of a short term Web Quest, a learner will have grappled with a significant amount of new information and made sense of it. A short- term Web Quest is designed to be completed in one to three class periods. A MOO is a shared virtual space that people can help create from their own computers. You can set up your conference room the way you like it and invite others to join you there.

Conclusion

The present age is the age of technology, whereby technology plays a key role in daily lives; this also includes the educational system. There are endless possibilities with the integration of ICT in the education system. The use of ICT in education not only improves classroom teaching learning process. It is important that teachers or trainers should be made to adopt technology in their teaching styles to provide pedagogical and educational gains to the learners.

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USAGE OF DIGITAL TECHNOLOGY AMONG SCIENCE STUDENT TEACHERS

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Abstract

Communication is an important tool and an everyday requirement for knowledge acquisition and information sharing in higher education and workplace. In higher education, communication allows students and staff to listen, share and understand information appropriately. Communication is now interactive with the use of Information and Communication Technologies (ICTs) and is evidently evolving and shaping the nature of work arrangement, organizational culture and educational achievement of a nation. Using ICTs in the classroom has gone a long way in resolving certain challenges with regards to over-crowding, limited resources and issues relating to classroom management. The aim of the present study is to appraise the usage of digital technology among teacher educators in Madurai district. The sample of the present study consists of 120 teacher educators. Percentage analysis techniques were used for this study. The results indicates the usage of digital technology among science student teachers is high and that there is significant difference between teacher educators using towards digital technology regarding gender, types and reasons for using digital technology.

Introduction

During the past few years, the world has witnessed a phenomenal growth in communication technology, computer network and information technology. Development of new broadband communication services and convergence of telecommunication with computers have created numerous possibilities to use a variety of new technology tools for teaching and learning system. The integration of computers and communications offers unprecedented opportunities to the education systems with its capacity to integrate enhance and interact with each other over a wide geographic distance in a meaningful way to achieve the learning objectives. The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom . It has the potential to transform the nature and process of the learning environment and envision a new learning culture. Interactivity, flexibility and convenience have become the order of the day in the Digital Technologies supported environment. Digital Technologies opens up opportunities for learning because it enables learners to access, extend, transform and share ideas and information in multi-modal communication styles and format. It helps the learner to share learning resources and spaces, promote learner centered and collaborative learning principles and enhance critical thinking, creative thinking and problem solving skills. Not only mastering ICT skills, but also utilizing Digital Technologies to improve teaching and learning is of utmost importance for teachers in performing their role of creators of pedagogical environments.

Need of the Study

The evolution Digital Technologies of has instigated changes in aspects of human life. It has absolutely heralded the knowledge economy. New media has interwoven itself into fabric of academics. The education is revamping itself as students are ardently using new media for the learning purpose. The conventional idea of enhancing knowledge in a classroom and libraries is seeing changes as students depend on new media for better understanding, extra information, industrial knowledge, current affair and experiential learning. They are involved more in interaction, sharing information, acquiring skills and exemplary understanding.

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Digital Technologies is undoubtedly is causing a significant ripple in higher education by allowing students for greater specialization in curriculum. Students in college extensively use new media tools for varied academic purposes. From assignments to making notes, from alternate information to industrial content, their preference is new media. Bygone are days when students referred books in libraries for enriching themselves. In this era of e-generation with new media tools and the phenomenal spread of mobile phones, going online has turned easy to clarify their doubts instantly and satisfy their learning instincts. It is encouraging an outreach learning concept and producing a skill set students as the confident individuals and better future workforce. The Digital Technologies role in outreach learning without confining to prescribed information of syllabus topics among college students is studied in the current research paper.

Objectives

1. To know the level of usage of digital technology among science student teachers.
2. To know the usage of digital technology among science student teachers in the terms of gender.
3. To know types of using digital technology owned among science student teachers.
4. To know the reasons for using digital technology among science student teachers.

Hypotheses

1. The usage of digital technology among science student teachers is high.
2. There is difference in the usage of digital technology among science student teachers in the terms of gender.
3. There is difference in the types of using digital technology among science student teachers.
4. There is difference in reasons for using digital technology among science student teachers.

Methodology

The investigator used the survey method to find the usage of digital technology among science student teachers among 120 Madurai college students.

Statistical Techniques

Percentage Analysis Technique is used for this study.

Data Analysis and Discussion

Table 1 The Usage of Digital Technology Among Science Student Teachers

Particulars	No. of. Respondents	Usage of Social Media	Percentage %
Usage of education al Technology	120	120	100%

Table No.1 shows all the 120 sample of science student teachers use the educational technology. Hence the research hypothesis, the usage of digital technology among science student teachers high is accepted. So the usage of digital technology among science student teachers is high.

Table 2 Science Student Teachers' Digital Technology Experience in Relation to Their Gender

Gender	No. of. Respondents	Percentage%
Male	75	62.25%
Female	35	27.75%
Total	120	100%

Table No.2 shows the gender wise distribution of respondents. In this study, 75 (62.25%) of the respondents are male science student teachers whereas 35 (27.75%) of the respondents are female science student teachers using digital technologies. So there is difference in the usage of digital technology among science student teachers in the terms of gender.

Table 3 Types of Using Digital Technology among Science Student Teachers

Types of Digital Technology Owned	No. of. Respondents	Percentage%
Laptop	70	58.35%
Desktop	30	25%
Ipad	10	8.35%
Total	120	100%

Table No. 3 shows, more than half (58.33%) of the science students teachers owned their own laptops which made it easier for them to interact and learn better. Using these digital technologies enables them to work independently at home in order to organize learning materials on their own thereby enriching classroom interactions. So there is difference in the types of using digital technology among science student teachers.

Table 4 Reasons for Using Digital Technology among Science Student Teachers

Reasons for using digital technology	No. of. Respondents	Percentage%
Learning	40	33.34%
Interacting with teacher	5	4.17%
Interacting with the peer	10	8.34%
Socializing	10	8.34%
Locating ideas	10	
Making Inference	10	8.34%
Evaluating comments	15	12.26%
Reorganizing information	20	16.67%
Total	120	100%

Table.No.4 shows. the majority of the science student teachers use digital technologies for using to learning 40 (33.34%), interacting with teacher (4.174%), interacting with the peer, Socializing, locating ideas and making inference (8.34%)) Evaluating ideas (12.25%) and Reorganizing information (16.67%). So there is difference in reasons for using digital technology among science student teachers.

Major Findings

1. The usage of digital technology among science student teachers is high.
2. There is difference in the usage of digital technology among science student teachers in the terms of gender.
3. There is difference in the types of using digital technology among science student teachers.
4. There is difference in reasons for using digital technology among science student teachers.

Implications

The research clearly indicates digital technology has created a significant ripple in the education sector. It has introduced to the concept of dynamic learning methods beyond the formal classroom. Digital technology is proving that it is not just a medium of fun but bundle of knowledge for the interested. This is evident with students resorting to the tools of digital technology for learning and understanding the concepts of academics. College students' online learning is not confined to academics but is making them socially active by providing a platform to make their voice heard or to express them. Undoubtedly, it is widening their knowledge horizon through experiential learning. New media is the sort medium to acquire the required skills for professional development. An agent of immense change, new media technology is allowing for greater specialization of the curriculum. It is enriching the students' knowledge sector with substantial information on varied aspects. Digital technology tools are contributing interest driven community and peer learning. The digital media has enthralled the college students to great extent with its spontaneity and interactive nature. Though new media is creating a revolution with positive approach, its negative aspects are undeniable. The new media technology is well accepted as the content, approach, presentations are crafted according to individuals needs. It definitely is tool to produce confident and competitive students.

Conclusion

A great transformation is seen from books, libraries to mobiles, computers, and digital media in the era. The era is well a synonym to the e - generation, which is technology driven. Its ingress in to the knowledge economy has significantly changed the learning sphere. It has broadened the academic world from pre set goals like syllabus, examination to skills, world affairs, community learning and of all an

experiential learning. It is treading its path to make students carve a niche for themselves in the competitive world. New media technology has bombarded the student fraternity with wide array of rich content, avenues for learning, social participation and medium for expression. It has broken the barriers of learning amidst four walls by providing an exposure to information on academics as well as topic of interest. It is allowing the students to construct their own knowledge and enhance their skills for the professional development. Indeed new media technology is interwoven into academics giving a multidimensional approach to educational sector and the knowledge economy. The digital technology in education is creating a genre of outreach learning and contributing for the future global leaders.

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ICT IN ENGLISH LANGUAGE TEACHING AND LEARNING

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Abstract

A great number of articles have been written about English language teaching and the use of ICTs (Information and Communication Technologies) during the last decade, achieving a laudable outcome. Recent literature has shown that the use of ICTs in the language classroom has a lot to offer to both learners and teachers, with learners enhancing their vocabulary, improving their reading and speaking skills, and with teachers having to hold a double role; the role of the educator and that of the facilitator, while having to cope with complex situations which include lack of training or lack of equipment in the language classroom. In this paper we shall review and present some representative studies on this field during the last decade.

Introduction

Now, ICT (Information and Communication Technology) has been used in almost all fields of life, including in education. In education, computer technology has become so essential that the government put ICT as one of the curriculum in Indonesia's education. The utilization of ICT in education has recently started to appeal the potential and significant progress in language learning. It has become a major issue in education world and has been used from preschool through to university that could facilitate students and teacher in teaching and learning process. ICT has been publicized as potentially powerful enabling tools for educational change and reform. The computers play significant role in the learning process especially in learning language.

Electronic Books

Electronic book or e-book is one that utilizes computer technology to deliver multimedia information in the form of a compact and dynamic. In an" e-book can be integrated impressions" sound, graphics, images, animations, and" movie" so that the information presented is richer than conventional books. Type e-book of the simplest is a mere transfer of conventional books into electronic form displayed by the computer. With this technology, hundreds of books can be stored in a single piece of solid disc / CD" or" compact disk (capacity of about 700MB), DVD or digital versatile disc"" (capacity 4.7 to 8.5 GB) and ' 'flash" (currently available capacity up to 16 GB). A more complex and require more rigorous designs such as the Encyclopedia Britannica and Microsoft Encarta encyclopaedia which is in multimedia format. Multimedia format allows e-book provides not only written information but also sound, images, movies and other multimedia elements. A description of the type of music, for example, can be accompanied by footage of the sound of music so that the user can clearly understand what is meant by the renderer.

E-learning

Various definitions can be found for the" e-learning". Victoria L. Tinio, for example, states that" e-learning" includes learning at all levels, formal and informal, which uses a computer network (intranet and extranet) for the delivery of teaching materials, interaction, and / or facilitation. For most of the process of learning that takes place with the help of the Internet is often referred to as online learning. Broader definition proposed in the working paper SEAMOLEC, the e-learning is learning through electronic services.

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Information and Communication Technology

ICT covers any product that will store, retrieve, manipulate, transmit or receiving information electronically in a digital form. For example, personal computers, digital television, email, robots. So ICT is concerned with the storage, retrieval, manipulation, transmission or receipt of digital data. Importantly, it is also concerned with the way these different uses can work with each other.

The Benefits of ICT in General

ICT is found to be advantageous in several ways as mentioned by Herington (2002), (1) technology facilitates exposure to authentic language; (2) technology provides the access to wider sources of information and varieties of language; (3) technology gives the opportunity to people to communicate with the world outside; (4) technology allows a learner – centered approach; (5) technology develops learner's autonomy. ICT help people in order to get information and to communicate each other in wider range.

ICT Tools in Language Context

There are some kinds of technologies classified into information and communication technology commonly used in language context, such as:

Interactive Multimedia

Interactive media is the integration of digital media including combinations of electronic text, graphics, moving images, and sound, into a structured digital computerized environment that allows people to interact with the data for appropriate purposes. The digital environment can include the Internet, telecoms and interactive digital television. (Finney, 2011:2)

Computer

Computer can be utilized with other multimedia learning devices or it can stand alone (a standard PC) and still serves its basic purpose as an electronic medium of language learning. (Hartoyo, 2012:29). Computer is an electronic device which is capable of receiving information (data) and performing a sequence of logical operations in accordance with a predetermined but variable set of procedural instruction (program) to produce results in the form of information or signals based on Oxford dictionary. It is consist of CPU, monitor, keyboard and some other apparatus.

Audio Devices

Audio devices can be used with other media to form an interactive multimedia. However, it can also be utilized separately as independent tool. Audio devices include speaker, earphone, CD, and etc.

Internet

Internet can be used as a medium of language learning through email, www (world wide web), text, audio and video conferencing.

Television

According to Oxford dictionary, television is a system for converting visual images (with sound) into electrical signals, transmitting them by radio or other means, and displaying them electronically on a screen.

Telephone

This telephone medium has not been widely used for language teaching because of the poor quality of analogue transmissions. However, there is new invent of digital quality and lower connection cost which potential for conference calls.

Mobile Gadget

Mobile gadgets such as cell phone and smart phone which are equipped with programs like computer, which enable it to perform as mini personal computer. By using this gadget and its internet connection, everybody could enjoy chatting, browsing, and discuss each other with the wider range. The advancement of science and technology makes the size and price of those gadgets are getting cheaper and reachable.

Social Interface

This media provides facility or example that enables an interaction between human and computer. People set up more interaction with computer in a more intuitive way with less effort-through writing, voice, touch, eye movements, and other gestures. (Hartoyo,2012:34) This technology serves as the milestone of the recent development of interactive multimedia, audio-graphic computer teleconference, and interactive television via satellite (National Broadband of Employment, Education and Training, 1993:5).

Interactive Whiteboard

An interactive whiteboard or IWB, is a large interactive display (such as a touch screen monitor) which is connected to a computer and projector. A projector projects the computers' desktop onto the board's surface, where users control the computer using a pen, finger or other devices.

Current Application of ICT in English Language Teaching and Learning

ICT defined as technology which the function is to support the process of conveying information and communication. The ways of conveying information doesn't have to be carried out directly between the communicator and the communicant. The development of ICT makes the process of communication between the communicator and the communicant can be conveys in easy ways. They can communicate through telephone, internet, e-mail, satellite, television, video conference and so on. The process of those communications applies in language learning. In language learning, there is a communication between teacher and student. The process of learning is not always carried out by subjecting teacher and students in the certain room or a certain place directly. As the example, teacher can use internet as the medium to give lessons, assignments, or other information to their students.

a) Presentation

Some material of language learning such as text-based materials, audio-video needs to present to the learners. Presentation helps learners in understanding the learning material well.

b) Practice

Some of different exercises types are possible to be provided with ICT, incorporating the presentation stimuli in varying combinations of text, audio and video format. ICT also offers the possibility of the analyzing learners' responses with appropriate feedback.(Hartoyo, 2012:40)

c) Authoring

In applying ICT in language learning, teacher can either purchase ready-made materials or create their own exercise materials using a variety of authoring tools based on Hartoyo (2012:40).

d) Computer-Aided Assessment (CAA)

Computer-Aided Assessment (CAA) is playing an increasingly important role in foreign language teaching and learning. This media used to testing and assessing students understanding after learning some courses.

e) Publishing

ICT tools exist to help teachers and learners or students to publishing or linked in their work in a local area network. ICT may use by the teacher and learners to help them publish their work in these ways:

- Word – processors and Desk Top Publishing (DTP) software

- Doing audio recording and editing tools to record interview, discussions, learning material and etc
- Using digital camera and camcorder to record presentations, drama, role play, and so on
- Power point can be used as the medium to publish presentations
- Web pages using web authoring tools

f) Communications

Technology can help learners and teachers to communicate with another. Some ICT tools which can use as the medium of information are: 1) Email, which allows language learners to communicate with 'web pals' in other countries; 2) Tandem learning; 3) computer mediated discussion; 4) web-based learning environment; 5) audio conferencing; 6) Video Conferencing.

g) Simulations

The computer can act as a stimulus which generates analysis, critical thinking, discussion and writing. Program which include simulations are especially effective as stimuli. Examples of language learning tasks which 'simulate' real world tasks are : 1) Web Quest; 2) Action Mazes; 3) Adventure games; 4) Sunpower; 5) Expodisc; 6) "Real-life" simulations; 7) video conference.

Conclusion

The use of ICTs in English Language learning and teaching is an area not yet fully explored. Both learners and teachers have a lot to gain by their use as well as to offer. Each aspect of ICTs whether that is online reading, CBDs aiming at vocabulary enhancement or computer-based speaking enhancing literacy activities provide learners of our times with invaluable knowledge, not just language-based but also multimedia-based ones. Additionally, we should not overlook the motivational value ICTs have on children and learners as well as the fact that ICTs have flexibility in their use which allows them to be used with both struggling and non-struggling learners, thus their educational value is multiplied.

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ACCESSIBILITY OF ICT AMONG HIGHER SECONDARY SCHOOL TEACHERS WORKING IN GOVERNMENT AND UN AIDED SCHOOLS

I.Uma Maheswari

Introduction

In the age of information Technology, not only the students but also the teachers need to be conversant with the knowledge of ICT. In order to get full exposure to changing technology the teachers also need to handle ICTs on a daily basis. Apart from this, teachers need to give more visual effects & ideas to the modern teaching-learning process and this is possible only with the Multi – media presentations, Graphics etc. with the smart board given by the Tamil Nadu Government to all the Government schools. The self financing schools increase admission by using ICTs.

Need For the Study

ICT has revolutionised the whole world. The education is no exception to it. It has influenced the field of education at all level. It has amplified the process of teaching and learning. The government of Tamil Nadu has come out with free laptops to higher secondary students and smart board to all the schools for teaching learning process. In this context, there is a need for accessibility of computer among higher secondary teachers and this study has posed a question of what is the level of accessibility ICT competency among higher secondary teachers in the Government and Self financing schools.

Background of The Problem

Research studies (Jones 2004; Al-Senaidi et al. 2009; Karasavvidis 2009; Agyei and Voogt 2011; Prestridge 2012) have reported a number of barriers/obstacles teachers experience in the integration of ICT in their classrooms such as lack of access to resources, lack of confidence among teachers, lack of time, lack of training opportunities, technical problems, lack of knowledge about ways to integrate ICT in lessons, poor administrative support and poor fit with the curriculum. The published report (Jones 2004) included the following conclusions: (a) levels of access to ICT are significant in determining levels of use of ICT by teachers, (b) teachers are sometimes unable to make full use of the technology because they lack the time needed to prepare materials for lessons, (c) resistance to change is a factor which prevents the integration of ICT in the classroom, (d) technical faults with ICT equipment are likely to lead to lower levels of ICT usage and (e) teachers who have little or no confidence in using computers in their work, will try to avoid them.

Terms and Definitions

ICT Access – refers to ease of use of ICT tools in schools and at home by higher secondary teachers. Higher secondary teachers refer to Post Graduate Assistants in various subjects of higher secondary course.

Objectives of the Study

To find out the accessibility of ICTs among higher secondary teachers in terms of type of school

Hypotheses of The Study

The accessibility of ICTs among higher secondary teachers in terms of type of school is moderate.

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Methodology

The researcher has used survey method to collect data to complete the present investigation.

Population for the Study

The population for the present study consists of higher secondary teachers working in the schools Madurai Revenue District.

Sample

The data were collected from 440 practicing higher secondary school teachers from 56 schools of Madurai Revenue District selected randomly.

Sampling Technique

The investigator has used random sampling technique.

Varibales of the Study

In a research, variable is the conditions or characteristics the experimenter manipulates, controls or observes. The present study is survey in nature. The research variable is on ICT access among higher secondary teachers working in Government and Self financing schools of Madurai District.

Tools Used

ICT access scale was prepared and validated by the investigator.

Data Analysis

The collected data was qualitatively analysed.

Results and Discussion

1. The accessibility to ICT of higher secondary teachers in Self financing school is high.

Table 1 Accessibility to ICT

Variable	YES																NO	%
	Home						Institution											
Type of the school	Have Personal Computer	%	Have Laptop	%	Have Tablet	%	Every one provided with PC	%	Sharing PC in the staff room	%	Sharing PC in the Office / Library	%	Browsing Centre	%	Other Sources	%		
Govt	19	4	25	6	5	1	4	1	3	1	3	1	24	5	0	0	25	6
Self financing	106	24	73	17	23	5	9	2	7	2	10	2	27	6	2	0	75	17
Total	125	28	98	22	28	6	13	3	10	2	13	3	51	12	2	0	100	23

From the above table it is inferred that the accessibility of higher secondary teachers working in Self financing school is high. In Self financing school 24% of higher secondary teacher have accessibility to personal computer in home, 17% to laptops and 23% to tablet. In the Institution 2% have accessibility to ICT through their individual PC provided, 2% through sharing of PC in their staff room and 2% of them

through sharing PC in the office / library. In the browsing centres 6% have accessibility to computer. In the Govt schools 4% of higher secondary teacher have accessibility to personal computer in home, 6% to laptops and 1% to tablets. In the Institution 1% have accessibility to computer through their individual PC provided, 1% through sharing of PC in their staff room and 1% of them through sharing PC in the office / library. In the browsing centres 5% have accessibility to computer. There are 17% of teachers who have no accessibility to computer in urban area and 6% are not accessible to computer in Government school.

2. The accessibility to ICT for academic work of higher secondary teachers in Self financing is high.

Table 2 Accessibility to ICT for academic work

Variable	YES														NO	%
	Teaching / learning process				Preparing notes						Administrative work					
Type of the school	For conducting practical class	%	Only for taking Class	%	Study Materials	%	Question Bank	%	CAI package	%	Preparing Mark Statement	%	Setting Question Papers	%		
Government	25	6	22	5	13	3	10	2	0	0	6	1	7	2	25	6
Self financing	69	16	61	14	34	8	19	4	8	2	11	3	13	3	117	27
Total	94	21	83	19	57	13	29	7	8	2	17	4	20	5	142	32

It is inferred from the above table that the accessibility to ICT for academic work of higher secondary teachers in Self financing school is high. In urban areas 16% of higher secondary teachers have accessibility to ICT for conducting practical class, 14% for only taking class, 8% of them in preparing study materials, 4% for preparing question bank, 2% for preparing CAI package, 3% in preparing mark statement and 3% in setting question papers. In the Government school 6% of higher secondary teachers have accessibility to ICT for conducting practical class, 5% of them for taking class, 3% for preparing study materials, 2% for preparing question bank, none for preparing CAI package, 1% for preparing mark statement and 2% for setting question papers. In Self financing schools 27% of higher secondary teachers are not accessible to ICT for academic work and in Government schools 6% of higher secondary teachers are not accessible to ICT for academic work.

3. The accessibility to LCD projector of higher secondary teachers in Self financing school is high.

Table 6 Accessibility to LCD projector

Variable	YES						NO	%
Type of school	Classroom	%	Audio visual room	%	Mobile Projector	%		
Government	24	5	42	10	2	0	40	9
Self financing	36	8	72	16	5	1	219	50
Total	60	14	114	26	7	2	259	59

It is inferred from the above table that the accessibility to LCD projector of higher secondary teachers in Self financing school is high. In Self financing school 8% of higher secondary teachers have accessibility to LCD in their classroom, 16% in their audio visual room and 1% with the mobile projector.

In Government schools 5% of higher secondary teachers have accessibility to LCD in their classroom, 10% in their audio visual room and none with the mobile projector.

4. The accessibility to smart board of higher secondary teachers in Self financing school is high.

Table 7 Accessibility to Smart board

Variable	YES						NO	%
Type of school	Classroom	%	Smart board	%	Seminar Hall	%		
Government	28	6	46	10	8	2	26	6
Self financing	36	8	85	19	15	3	196	45
Total	64	15	131	30	23	5	222	50

It is inferred from the above table that the accessibility to smart board of higher secondary teachers in Self financing school is high. In Self financing schools 8% of higher secondary teachers have accessibility to smart board in their classroom, 19% in their audio visual room and 3% in the seminar hall. In Government schools 6% of higher secondary teachers have accessibility to smart board in their classroom, 8% in their audio visual room and 2% in the seminar hall.

Conclusion

Accessibility to ICT for teachers in this era in the field of education is very essential. The type of the school plays the major role in the accessibility to ICTs. The accessibility to ICT by Self financing school teachers are high when compare to the Government school teachers. The self financing schools have more funds to equip their schools with all the ICT tools. The Government should also allocate funds for the development of ICT facilities in the schools. The role of teachers is to build future students who are the pillars of our nation by improving the quality of education process. The present students are very well exposed to modern technology and their knowledge and thinking are very fast. To cope up with the students, the teachers should be well competent and capable of using modern technology wherever the school is located.

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APPLICATION OF INFORMATION COMMUNICATION TECHNOLOGY AND BIG DATA ON IMPROVING FLIPPED CLASSROOM

M. Priyanga

Abstract

Big data contains a large volume of data. When the popularisation and development of the mobile application and information technology education. This paper should be contained in the analysis of digital education big data technology. The mobile learning technology can be applied to flipped classroom and also using massive open online course (MOOCS). It also has on mobile education, information communication technology, mobile intelligent, and technology management. Our conclusion of the paper is mobile learning importance, how the mobile application provides high-quality learning resources to the learner.

Introduction

Big data is an extremely large volume of data sets, it has been analysed computationally to trends, associations, and patterns, especially relating to interactions human and behaviour. The main source of big data is social media, camera footage, personal details, banking details etc., With the popularity of mobile intelligent terminal, the mobile Internet has been developed rapidly and the dissemination of information has undergone a fundamental change. Combined with the promotion of education informatization, the teacher and the learners gradually realize the feasibility of online learning. Online learning describes the multidimensional learning vision from the content, time and space, helping learners receive digital learning resources of high quality. In service systems, value creation is difficult to measure and anticipate: service systems depend not only on people, information, organizations, and technologies, but also on interactions among these, which has emergent consequences. We think a key problem in understanding service systems lies in understanding the critical role of people and their relationships with other components, such as information and technology. Online learning provides an effective method for education planning and discovers the differences of learners through collecting and collating learners' information, realizing the transformation from static mode to dynamic mode of education. Especially, with the fact that Big Data, learning analysis and other technologies are getting mature gradually, online learning provides autonomous learning with a substantial guarantee.

Mobile Learning

Mobile learning or M-Learning is refers to the use the mobile intelligent to help the learners to improve knowledge any time any where to get knowledge about the any kind of subject. Mobile learning must solve two fundamental problems: inthe form, the learners must have access to thesupport of mobile Internet, cloud computing andother information technology which provideprotection whenever and wherever possible for usersto obtain knowledge. In the content, the developers have to make the reasonable arrangement of learningprocess and the learning substance. Its main task is to manage learning resources, including the realization of the externalization of tacit knowledge in various ways, managing the explicit knowledge storage and constructing expert map (Zheng & Chen 2012). Mobile learning not only inherits the basic properties and advantages of the traditional distance education, but also becomes an effective solution to the problem of time and space limits for continuous learning, helping learners get access to knowledge and solve other learners' problems at any time, any place. Mobile learning has a more extensive application prospect, and becomes a hot topic and research direction in Chinese and foreign educational field.

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The Mobile Learning Applications

Considering the fact that the mobile intelligent terminal operation ability is limited and the amount of data and information is huge, we will involve calculation on the server process (Zheng &Chen 2012). The client is responsible for receiving user request and displaying the final data, realizing the real-time interaction between platform and users. Nowadays, the mobile intelligent terminal can be widely supported in formal and informal learning environment tools and meet the mobile learner's expectations of knowledge content, community interaction and cooperative learning (Chen et al. 2013). Especially in the last two years, the attention on mobile technology application in education has been moved from the improvement of intelligent hardware equipment and the better use of the mobile devices in education field to the combination of Big Data and mobile learning technology in mobile learning that makes greater contribution to education (Wang 2013).

Big Data Technology

When the development of cloud computing, Big Data technology has attracted more and more attention (Bienkowski et al. 2012). The era of Big Data in mobile learning has become the focus of attention. According to the new definition given by IBM, Big Data has the characteristics of 5V: Volume, Veracity, Variety, Value, and Velocity. First, compared with the traditional physical classroom curriculum, the scope of mobile learning is very large which can reach hundreds of thousands of people. The traditional database software cannot capture, store, manage and analyze such data as the mobile learning's data. Second, Big Data is often naturally occurring data in the process of learning.

Third, the types of Big Data are varied which have far-reaching research value. For example, by tracking the learners in the online classroom in each operation of learning step, mobile learning platform can collect accurate and detailed data on the learning behaviors, including the accuracy of classroom tests, the length of time on watching the video and the active degree of thecommunity interaction, which is difficult to collectin traditional classrooms.

Flipped Classroom and MOOCS

Flipped Classroom

As a kind of teaching system born in the modern society, Flipped Classroom is called the newteaching pattern of reverse mode, its specificimplementation measures are as follows. When the learners can commit themselves to the autonomous study according to their own studying levels and take the courses by watching videos, reading related articles or using their own knowledge to make sense of the new learning content. At the same time they can have a review of the old knowledge and deepen the understanding of the knowledge system when doing the autonomous learning of pre course. On the other hand, It can help learners gain a lot and broaden their knowledge when discussing mutually in the autonomous learning mode. Besides mastering the basic knowledge of subjects in advance, learners also complete the information transmission and reception process by autonomous learning in extra-curricular and classroom learning system where they can ask the teachers for guidance of learning content in doubt. After using the tasks laid out before class as an example to explain the new knowledge, what teachers do in the classroom further help learners strengthen their understanding,

Moreover, it helps to improve the quality of teaching, in which what can be improved obviously is learners' abilities to grasp the learning content. Compared with the traditional teaching mode, the process of internalization of knowledge can be finished in the classroom. There is prove to show that strengthening the teachers' guidance and the interaction between teachers and learners, and between learners themselves, can make it easier for learners to consolidate new knowledge because this kind of teaching activities can deepen impression of what they have learn. As a whole, the learners are no longer just taking the same notes and learning the same things without autonomy in the passive stage, but participating in the learning activities and discussions actively with the teachers and classmates to explore learning problems as to improve the learning interest greatly, which help to cultivate the consciousness and ability of learners and inspire innovative thinking to meet the learning needs.

MOOCs

MOOCs is the abbreviation for "Massive Open online courses (Zhang & Li 2013)". With high degree of openness, flexible interactivity, and massive quantity and high quality of curriculum resources, MOOCs focus on creating short and high quality learning curriculum resources, to serve the scholars all over the world in ways of interactive communication anytime and anywhere, helping them break the limits of space and time to do the autonomous learning. That is why MOOCs can develop rapidly and get scholars' and users' fervent attention and full-hearted support.

As one of the social characteristics of MOOCs is to be the participatory open learning resources, Mu class can help the scholars all over the world regardless of time, space, environment limits, fulfilling personalized learning plan in a virtual network classroom. Free sharing of Mu class resources mean that all people have the equal opportunity to accept college-level quality study learning resources with low education cost, which is conducive to the maintenance of world education fairness. In an effective way, MOOCs promote world teaching reform and the development of education all over the world.

Application of mobile learning and
Big data to the flipped classroom and MOOCS

MOOCs gather learners' data gradually in the process of teaching. Through in-depth analysis and tracing of the data of learner characteristics, MOOCs will intelligently match the needs of next step, so as to catch the differences in knowledge transmission which enables the teacher to educate students according to individual abilities respectively. Large network open courses complete the index that the traditional physical classroom is difficult to complete. Adaptive mobile learning system is established on the basis of this, can quickly and accurately show the effects of learning, and recommend next learning points (including the key points, and how to transfer the knowledge from one aspect to another).

Analysis of Big Data processing in Mobile
Learning

Mobile technology enables students to actively take part in the generation, collection, representation, visualization, analysis, interpretation and communication. The huge amount of data generated from trading and sensor, and from activities such as communication, browsing, purchase, share and search for by-products, these huge set from various sources of data and in a variety of formats used has created Big Data.

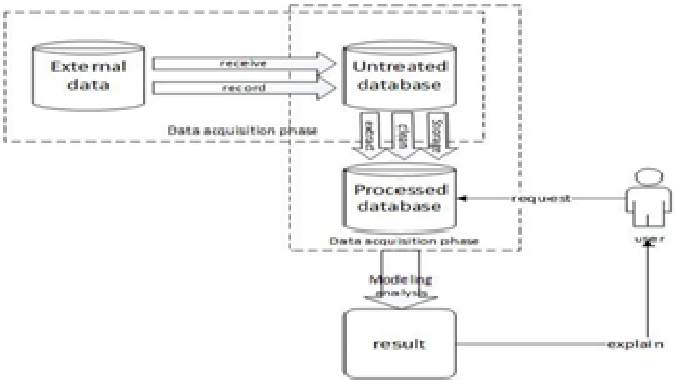

Figure 1 Big Data processing flow

Figure 1 shows Big Data processing divided into processing flow of data acquisition, data integration and data analysis. The data acquisition stage is mainly to completereceiving and recording operation to the externaldata source. The receiving mode of Big Data is themain sensor, click on the mobile device, applicationservice access and RFID access. The Big Data recordmainly completes the metadata selection to construct the data structure needed. Integration of Big Data ismainly to complete

the received data extraction,cleaning and storage operation. In the data analysisand interpretation stage, when users request a query,timely analysis with the model happens, and theresults to the user can accept the way back to theuser. The personalized resources recommendation model contains behaviour record module, model analysis module and the recommendation algorithm module. First, the behaviour record module is in charge of recording the messages of operation, registration and stores the relevant data to the corresponding database. The database will arrange data which become the input part according to the regulation. Second, model analysis module is responsible for extracting and detecting users' information, and then summarizes the characteristics of users according to the relevant statistics and analysis. Third, recommendation algorithm module is the core module of personalized resource recommendation model and it processes the entire model calculation work. It provides accurately recommended service for the target users through collaborative filtering of resources.

Concluding Remarks

In the field of Internet, mobile learning mainly reflects the interaction between the user and system, linking knowledge dissemination and knowledge acceptance. Besides serving classroom teaching, itcould also be used to teach or assist professionals in learning specialized knowledge outside of classrooms, such as clinicians in the medical field. Mobile learning can be used as social platforms (such as EdCast) or information education app (such as MOOC, Coursera) to get or share all kinds of information. In the application of mobile learning, Big Data technology is important for immediately selecting the useful information from the massive data. The appliance which combines the mobile learning and the Big Data technology to deal with educational data can establish preference model and prediction model, so as to accurately position the interests of users and provide learning strategy suggestion for users. It can even help the learners establish systematic knowledge map of their own from their fragmented learning.

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A STUDY INTO ATTITUDE TOWARDS MATHEMATICS AMONG HIGHER SECONDARY SCHOOL STUDENTS IN MADURAI DISTRICT

Dr. M. Arockia Priscilla

Abstarct

The present study is a survey study in nature to find out the correlation between attitudes towards mathematics and achievements in mathematics among XI standard students in Madurai District. The study is to find out the attitudes towards mathematics among XI standard students in terms of various sub groups of the sample identified for the study. For this purpose Mathematical Interest Inventory available in the market was used. In order to find out the achievements in mathematics among XI standard students in terms of various sub groups of the sample, the investigator constructed and standardized an achievement test based on mathematical units from XI std. text book prescribed by Tamilnadu Government. The test was conducted and data were collected from the sample. The obtained data were analysed in terms of correlation and differences between the attitudes towards mathematics and achievements in mathematics in terms of various sub groups. The findings and conclusions drawn from the data are recorded in this study report.

Need for the Study

Through the use of abstraction and logical reasoning, mathematics evolved from Counting, Calculation, measurement, and the systematic study of the shapes and motions of physical objects. Knowledge and use of basic mathematics have always been an inherent and integral part of individual and group life. Today, mathematics is used throughout the world in many fields, including natural science, engineering, medicine, and the social sciences such as economics. Applied mathematics, the application of mathematics to such fields, inspires and makes use of new mathematical discoveries and sometimes leads to the development of entirely new disciplines. Mathematicians also engage in pure mathematics for its own sake. Mathematics is the body of knowledge centered on such concepts as Quantity, Structure, Space, and Change. It helps the students quicken the process of mental faculties like logical derivations, abstract reasoning etc. It is an essential subject for all human beings. Mathematics at high school level is important one as these forms as the base for the future applications in science, engineering and other related fields. Attitudes towards Mathematical are the predominant factor that contributes for the success of students at high school level. Students' attitudes towards mathematics and their achievements in mathematics should be positively correlated. Sometimes many factors like poor organization of subject matter, ineffective teaching methods, classroom environment, and inadequate school infrastructure and so on may hamper the achievements of students in mathematics. So, the present study is an attempt to find out the relationship between attitude towards mathematics and achievements in mathematics among XI standard students in Madurai District.

Backround of the Problem

Mathematics colloquially, Maths or math is the body of knowledge centered on such concepts as Quantity, Structure, Space, and Change, and also the academic discipline that studies them. Benjamin Pierce called it "the science that draws necessary conclusions". Carl Friedrich Gauss referred to mathematics as "the Queen of the Sciences". Other practitioners of mathematics maintain that mathematics is the science of pattern, that mathematicians seek out patterns whether found in numbers, space, science, computers, imaginary abstractions, or elsewhere. Mathematicians explore such concepts, aiming to formulate new conjectures and establish their truth by rigorous deduction from appropriately chosen axioms and definitions.

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Today, mathematics is used throughout the world in many fields, including natural science, engineering, medicine, and the social sciences such as economics. Students are taking mathematics for want of prospective fields in higher studies. Mathematics at the higher secondary level establishes a base for future applications of mathematics in all fields. Interests in mathematics are the paramount importance to success in all the aforementioned fields. Therefore how well the subject mathematics is viewed by the students at the higher secondary level is the quest of this study. Whether the attitudes towards mathematics are sustained by the structure and organization of curriculum, teaching methods of schools and other factors? And Do attitudes towards mathematics correlate with achievements in mathematics? are the questions need to be answered through this study. This study would through more light on the attitudes towards mathematics and achievements in mathematics among higher secondary school students in terms of various subgroups selected for the study. Hence, the investigator having Masters Degree in Mathematics, Bachelors Degree in Education and Masters Degree in Education working as a P.G. Assistant in Govt. Higher Secondary School in Madurai District thought of the conduct of the present study entitled **"A STUDY INTO ATTITUDES TOWARDS MATHEMATICS AMONG HIGHER SECONDARY SCHOOLS STUDENTS IN MADURAI DISTRICT".**

Terms and Definitions

Attitudes Towards Mathematics – refers to well being of an individual towards mathematics subject.

Higher Secondary School Students – refers to XI AND XII Standard Students of 10+2+3 Students system of schooling in Tamil Nadu following state board syllabus.

Madurai District - refers to one of the Districts in Southern Part of TamilNadu.

Objectives of the Study

- To find out the correlation between attitudes towards mathematics and achievements in mathematics among XI Standard students in general.
- To find out the correlation between attitudes towards mathematics and achievements in mathematics among XI Standard students in terms of the subgroups of the sample selected for the study.
- To find out the attitudes towards mathematics among XI Standard students in terms of sex.
- To find out the attitudes towards mathematics among XI Standard students in terms of economic status of parents.
- To find out the attitudes towards mathematics among XI Standard students in terms of educational status of parents.
- To find out the attitudes towards in mathematics among XI Standard students in terms of types of schools where they study.
- To develop and validate a criterion referenced test on mathematics from XI Standard mathematics text book prescribed by Tamilnadu Govt.
- To find out the achievements in mathematics among XI Standard students in terms of sex.
- To find out the achievements in mathematics among XI Standard students in terms of economic status of parents.
- To find out the achievements in mathematics among XI Standard students in terms of educational status of parents.
- To find out the achievements in mathematics among XI Standard students in terms of types of school where they study.

Hypotheses Formulated for the Study

1. There is no significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of gender.

2. There is no significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of educational status of parents.
3. There is no significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of economic status of parents.
4. There is no significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of type of schools.
5. There is no significant difference among the mean scores of achievements in mathematics of XI standard students in terms of gender.
6. There is no significant difference among the mean scores of achievements in mathematics of XI standard students in terms of educational status of parents.
7. There is no significant difference among the mean scores of achievements in mathematics of XI standard students in terms of economic status of parents.
8. There is no significant difference among the mean scores of achievements in mathematics of XI standard students in terms of type of schools.

Delimitations and Scope of the Study

The study was confined only to attitudes towards mathematics and achievements in mathematics of XI Standard students in Madurai District. The study was conducted with XI Standard in various types of schools like Govt.-Aided, Municipal and Govt. schools in Madurai District. The study was confined only with Madurai district students.

The findings of the study will reveal attitudes towards mathematics and achievements in mathematics among XI Standard students in terms of sub groups of the sample selected in Madurai District only. It cannot be over generalized and considered as an overall reflection of attitudes towards mathematics and achievements in mathematics in all the Districts. However, it may indicate the correlation between attitudes towards mathematics and achievements in mathematics among higher secondary school students.

Procedure –in -Brief

The present investigation has been basically designed as a normative study with survey as the technique of research employed to find out attitudes towards mathematics of XI std. students. A criterion test was developed and standardized in XI std. mathematics syllabus to find out the achievements of students in mathematics. Stratified Random Sampling method was used to identify high school students in Madurai District. Strata were Govt.-Aided, Aided and Municipal higher secondary schools. The sub groups were sex, educational status and economic status of parents. Data were collected from the sample. The collected data were analyzed in terms of differences among XI Standard students within the sub groups of the sample selected for the study. The correlation between attitudes towards mathematics and achievements in mathematics were found out using Pearson's product moment coefficient of Correlation and significance of the difference between the means of two correlated groups were found out using correlated t-test. Discussions of results were presented in the fourth chapter. Meaningful conclusions were drawn in terms of the objectives of the study and suitable suggestions worked out.

Findings of the Study

1. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of Madurai District in general. There is also significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of Madurai District in general. The XI standard students of Madurai district are having higher attitudes towards mathematics than achievements in mathematics.
2. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard boys. There is no significant difference between attitudes towards

mathematics and achievements in mathematics among XI standard boys. There is uniformity between attitudes towards mathematics and achievements in mathematics among XI standard boys.

3. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard girls. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard girls. There is unanimity between attitudes towards mathematics and achievements in mathematics among XI standard girls.
4. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of illiterate parents. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of illiterate parents. There is uniformity between attitudes towards mathematics and achievements in mathematics among XI standard illiterate parents.
5. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of literate parents. There is significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of literate parents. The XI standard students of literate parents have more attitudes towards mathematics than achievements in mathematics.
6. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of graduated parents. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of graduated parents.
7. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students with parental income up to Rs.5000. There is significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students with parental income up to Rs.5000 per month. The XI standard students with parental income up to Rs.5000 per month have high attitudes towards mathematics than achievements in mathematics.
8. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students with parental income Rs.5000 and above. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students with parental income Rs.5000 and above per month.
9. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of Govt. Aided schools. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of Govt. Aided schools.
10. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of corporation schools. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of municipal schools.
11. There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of Govt. schools. There is no significant difference between attitudes towards mathematics and achievements in mathematics among XI standard students of Govt. schools.
12. There is significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of gender. The girls of XI standard are having high attitudes towards mathematics than the boys of XI standard.
13. There is no significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of educational status of parents.
14. There is no significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of economic status of parents.

15. There is significant difference among the mean scores of attitudes towards mathematics of XI standard students in terms of type of schools. There exists significant difference between the students of Govt. Aided schools and Municipal Schools. The students of Govt. Aided schools have high attitudes towards mathematics than the students of Municipal schools in Madurai District. However there exists no difference between students of Govt. aided schools and students of Govt. Schools and between the students of Municipal schools and students of Govt. schools.
16. There is significant difference among the mean scores of achievements in mathematics of XI standard students in terms of gender. The boys of XI standard are having high achievement scores in mathematics than the girls of XI standard in Madurai District.
17. There is no significant difference among the mean scores of achievements in mathematics of XI standard students in terms of educational status of parents.
18. There is no significant difference among the mean scores of achievements in mathematics of XI standard students in terms of economic status of parents.
19. There is significant difference among the mean scores of achievements in mathematics of XI standard students in terms of type of schools. The students of Govt. Aided schools have high achievements in mathematics than the students of Municipal schools and the students of Govt. schools.

Conclusions

The present findings are derived from the empirical data collected for the present study. Based on the attempts made by the investigator and the findings of the related studies, the investigator feels that far reaching conclusions could not be arrived at. As discussed earlier, the present study attempted to find out the correlation between attitudes towards mathematics and achievements in mathematics among XI standard students in Madurai District. It also aimed to find out the differences in attitudes towards mathematics and achievements in mathematics among subgroups of the sample selected for the study. From the perusal of the present findings the following conclusions can be drawn from the correlative and differential studies. They are: 1.There exists high to very high correlation between attitudes towards mathematics and achievements in mathematics among XI standard students of Madurai District in general. 2. The XI standard students of Madurai District have shown higher attitudes towards mathematics than achievements in mathematics. 3. The XI standard students of literate parents have more attitudes towards mathematics than achievements in mathematics. 4. The XI standard students with parental income up to Rs.5000 per month have high attitudes towards mathematics than achievements in mathematics. 5. The girls of XI standard are having high attitudes towards mathematics than the boys of XI standard. 6. The students of Govt. Aided schools have high attitudes towards mathematics than the students of Municipal schools in Madurai District. 7. The boys of XI standard are having high achievement scores in mathematics than the girls of XI standard in Madurai District and 8. The students of Govt. Aided schools have high achievements in mathematics than the students of Municipal schools and the students of Govt. schools.

Educational Implications

It has been found out that the XI standard students' attitudes towards mathematics are positively correlated to achievements in mathematics in Madurai District. The study has got an educational implication that is attitudes play a vital role in achievements of students. The students have shown that their attitudes towards mathematics are higher than their achievements. Further it is evident that the students of literate parents and students with income up to Rs. 5000 have higher attitudes towards mathematics than achievements in mathematics. The students' attitudes should be sustained by the factors such as school, curriculum transaction methods and so on. The girls of XI standard have high attitudes towards mathematics. The boys should develop attitudes towards mathematics. The students of Govt. Aided schools are having high attitudes towards mathematics than the students of other types. They should also be given orientation to develop positive attitudes towards mathematics. The boys and

Students of Govt. Aided schools have achievements in mathematics. The others should also be asked to achieve more in mathematics.

ENERGY EFFICIENT ROUTING PROTOCOL FOR MOBILE SINK IN WIRELESS SENSOR NETWORKS

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Abstract

The energy efficiency is an important key point in wireless sensor network. In general designing a routing protocol, without only transmitting sensing data back to sink node it need provide better energy efficiency or increase wireless sensor network efficiency. In many proposed network model, we use cluster-based network model to implement our mobile sink routing protocol. By setting up a sink routing schedule queue, mobile sink has a useful path routing through clusters. It also provides an energy efficiency way with decreasing communication, and improves the wireless sensor network lifetime. In this paper, the verification Simulation is also executed to prove the proposed "A Mobile Sink Routing Protocol" can increase the wireless sensor network lifetime.

Introduction

Wireless Sensor Networks (WSN)[1] is a popular research subject in recent years, that consist of hundreds to thousands of sensor nodes that have certain limits, such as low-power, limited processor, limited memory and communication restricted. Those sensor nodes have a wide range of applications such as military, battlefield, environment monitoring and etc. Research about WSNs can be categorized into following topics: Routing Protocol [2-3], Locating, Data Aggregation, Fault Tolerance and Energy Consumption.

The overwhelming majority and early researches focus on the above subject with static sink and sensor nodes. Node with mobility is fewer discussed. Therefore in this paper we attempt to propose a routing protocol that can be used with mobile sink. We present an energy-efficient cluster-based mechanism, termed A Mobile Sink Routing Protocol Based on the Average Energy. We have designed our proposed with the following goals in mind: Scalability, Simplicity and System Lifetime.

The paper consists of five sections. Section 2 explains the cluster-based routing protocol such as LEACH and LEACH-C. Section 3 we propose A Mobile Sink Routing Protocol Based on the Average Energy for Wireless Sensor Network. Next, section 4 we analyze the simulation results. Finally section 5 is the conclusion.

Related Work

LEACH [4] is clustering based on routing technique. Cluster head collects and aggregates data from member nodes and transmits the data to base station (sink). Member nodes only need sense the data and transmit to its cluster head. It is the basic concept of cluster-based routing protocol that sensor nodes play the role of cluster-head or cluster member and complete mission by division of labor and cooperation. LEACH circulates cluster head randomly by the equation below for distributing energy consumption and fuses the data within the cluster in the cluster head for reducing communication cost. Threshold is obtained by using the following formula:

T (n) = {P/1-P * (r mod 1/P)}, if n □ G → (1)

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Where, p is the desired percentage of clusters; r denotes the current round; G denotes set of nodes that have not been CHs in the last 1/p rounds. After formatting the clusters, the cluster head broadcast TDMA schedule which indicates data transmission order of cluster members. By this way, each cluster member transmits data only in own transmit slot and in the rest of time slots can go to sleep mode and decrease power consumption. It is the similar way while cluster heads transmit aggregation data to base station. The performance of LEACH counts on evenly deploying cluster head and the number of cluster head at each round. But it cannot be guaranteed by selecting cluster head itself.

LEACH-C

Because LEACH cannot be guaranteed by selecting cluster head itself, LEACH-C is proposed that decides cluster head and cluster concerning location information of sensor node and energy from base station.

Proposed Method

1. Mobile Sink Routing Protocol Based on the Average Energy of Cluster

In our proposed method, we suppose that all sensor nodes are random distributed in the sensor field with one mobile sink. Because of the sink mobility we do not think about the initial location of sink. Besides we assume that the location of static sensor nodes is known. We also use a simple way to re-select the cluster head. While the time period is up, the cluster head will be random chosen whose energy is more than threshold.

2. Procedure of Sink Routing Schedule Scheme

Now we can implement Sink Routing Schedule Scheme with the sink site's information table. After following the steps below, we can create a Sink Routing Schedule queue that can be used later.

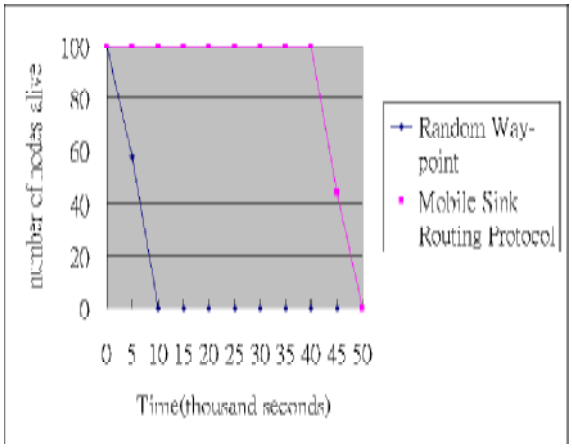
3. Create Sink Routing Schedule queue:

1. Choose the cluster head with maximum Pavg form the sink site's information table
2. Calculate the distance (D) from current cluster head to another cluster head that is chosen by step 1.
3. Add this CHRP into sink routing schedule queue and set it be the current cluster head. Jump to step 5.
4. Add the chosen cluster head into sink routing schedule queue and set it be the current cluster
4. head.
5. Repeat step 1.~2. Until all the cluster head are added into sink routing schedule queue.

When we operate the Mobile Sink Routing Protocol, we still need two more packets and one parameter. Hello packet is used of notifying sensor nodes that sink visit this cluster area. The "Cluster ID" field in Hello packet can determine that the mission have relation with itself or not. The "Time Period T" field in Hello packet is the parameter which we mention above. It means that how long sink need to move through all cluster head once. Information packet is the packet that cluster head transmit to sink in its mission. It consists of the aggregation sensing data and cluster information that can be used of updating sink site's information table.

Simulation

In our analysis, we use first order radio model. To evaluate the performance of our proposed method, we use the C language to run a number of simulations described below. We compare the performance with another routing protocol that still can use with mobile sink. A mobile sink move by random way-point and data transmit by flooding. The goal is to measure average energy consumption and system lifetime. We generate networks of 100 m x 100 m2 that having 100 nodes. Furthermore, the initial energy if each sensor node is 2J. In addition, we fix the message size at 500 bytes in all simulation and set the number of cluster head be 5. The mobile sink moving speed in our proposed method is 10 m/sec and in another routing protocol is 1~10 m/sec.



A comparison of the number of nodes alive

From the figure it can be seen that the method we proposed has the better performance on node alive. Because the energy consumption is equal. The sensor node will die while all sensor nodes' average energy is low. However another one consumes energy too fast, all sensor nodes die soon for a short while.

Conclusions

In this paper we propose the protocol that can be used under mobile sink. It provides the better performance for energy consumption. We also can understand the results in our simulation. It is energy efficiency and the sensing data can transmit back to sink successfully. In the future we will try to do our research to go a step further. Let not only the sink has mobility but also the normal sensor node has too. And the parameter T, we do not implement a sleep mechanism for it.

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AWARENESS OF ICT AMONG B.Ed., BIOLOGICAL SCIENCE STUDENTS"

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Abstract

The study investigated Awareness Of Ict Among B.Ed., Biological Science Students in southern district, Tamilnadu. The main objective of the study is to determine Awareness of Ict Among B.Ed., Biological Science Students. Nowadays , the information and communication technology (ICT) is often used to provide adequate challenges to all students. It brings into focus initiatives with ICT fostering learning for all students. In particular, it focuses on the teacher's need of inspiration and up-to-date knowledge in this field. It suggests various initiatives suited for the sharing of knowledge about best practice. An investigation of Awareness Of Ict Among B.Ed., Biological Science Students was analyzed in this study. The research was a survey type and the sample consists of 640 B. Ed Trainees drawn from two college through simple random sampling technique. Awareness of Ict tool was prepared and validated by guide and investigator. The interpretation of data was done with statistical methods in mean, standard deviation and 't'-test.

Keywords*: Awareness, ICT, B. Ed Trainees.*

Introduction

The emerging technologies are constantly changing the world around use. These Technologies have affected the learning and the way processes are carried out. The present education system is facing substantial pressure to prepare the students to learn, live and work in the digital age. Technology is becoming a powerful tool for communication, problem solving, and as a means of research for learning in education.

Information and Communication Technology

ICT has become a part of education. This ICT generally relates to those technologies that are used for accessing, gathering manipulating and presenting or communicating information. The technologies could include hardware and software applications and connectivity. For example accessing internet, local networking infrastructure and video conferencing. ICT is a genetic term, which is being used for collecting, strong, editing and passing information in various forms.

"It is technology required for information processing. It involves use of computers, computer software and other devices to convert, store, and process, transmit and retrieve information and includes the services and applications associated with them (Malik 2005)

Components of ICT

The components can be divided into two categories.

1. Hardware components.
2. Software components.

Hardware components

The term hardware is applied to any of the physical equipments in a system, usually containing electronic components and performing some kind of function in information processing. The input devices, output devices and computer peripherals are some of the examples of hardware components.

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Software components

This software is an application of ICT. One of the major components of ICT is internet

Significance of the Study

As we live in the world of competition we need to acquire adequate knowledge about computer and it uses in the field of education. B.Ed., students as Future teacher educators, should have greater access to ICT as to disseminate the knowledge to all those they come in contact with this is their primary responsibility. Nowadays , the information and communication technology (ICT) is often used to provide adequate challenges to all students. It brings into focus initiatives with ICT fostering learning for all students. In particular, it focuses on the teacher's need of inspiration and up-to-date knowledge in this field. It suggests various initiatives suited for the sharing of knowledge about best practice. With this idea in mind, the investigator has chosen the ICT Skills of B.Ed., students for the research and hope that this study will be great use for the B.Ed., Students The present study investigates the awareness of social media among B. Ed Trainees.

Objectives

1. To find out the significant difference, if any, in the ICT of biological science students in terms of selected background variables.

Hypotheses

H_o1: There is no significant difference between male and female of biological science students with reference to their awareness of ICT and its dimensions.

H_o2: There is no significant difference between rural and urban college biological science students with reference to their awareness of ICT and its dimensions.

H_o3: There is no significant difference between Tamil and English medium biological science students with reference to their awareness of ICT and its dimensions.

Delimitation of the Study

1. The study is limited to in Biological Science Students in southern district only.
2. The investigator has proposed to choose only 640 B. Ed students as sample for the study.

Method Used

Survey is a fact finding study. (Best, 1986) states that "The survey method involves interpretation, comparison, measurement, classification, evaluation and generalization. All directed towards a proper understanding and solution of significant educational problems". So the researcher has chosen survey method to study the "**Awaranees of ICT among biological science B. Ed students**".

Population and Sample

The population of the present study consists Biological Science Students in southern district and Tamilnadu. The investigator has used simple random sampling technique for selecting the sample from the population. The sample consists of 640 B. Ed trainees. Among them 94 were male and 546 were female B. Ed trainees.

Tools Used

This study aims to evaluate the awareness of ICT among B. Ed Biological trainees. The investigator has prepared and validated the awareness of ICT Scale.

Statistics Techniques Used

't' test were used in this study.

Analysis of Data

Significance of difference in the awareness of ICT of biological science trainees

H_o 1: There is no significant difference between male and female of biological science trainees with reference to their awareness of ICT and its dimensions.

Table 1 Difference between Male and Female Biological Science Trainees with reference to their Awareness of ICT and its Dimensions

Dimensions	Gender	N	Mean	S.D	Calculated 't' value	Remarks at 5% level
Internet awareness	Male	94	3.78	1.946	0.97	NS
	Female	546	3.59	1.700		
Software awareness	Male	94	3.47	1.442	0.53	NS
	Female	546	3.38	1.428		
Computer awareness	Male	94	6.87	2.810	0.01	NS
	Female	546	6.88	2.999		
General awareness	Male	94	8.24	3.438	0.55	NS
	Female	546	8.44	3.147		
Hardware awareness	Male	94	5.35	2.593	0.98	NS
	Female	546	5.08	2.410		
Website awareness	Male	94	3.43	1.763	1.00	NS
	Female	546	3.62	1.748		
Email awareness	Male	94	2.64	1.537	0.98	NS
	Female	546	2.83	1.728		
Awareness of ICT in total	Male	94	33.78	11.350	0.03	NS
	Female	546	33.82	10.367		

(The table value of 't' is 1.96, NS- Not Significant)

It is inferred from the above table that the calculated 't' value is less than the table value (1.96) for df 638, at 5% level of significance. Hence the respective null hypothesis is accepted. It shows that there is no significant difference between male and female biological science trainees with reference to their awareness of ICT and its dimensions.

H_o 02: There is no significant difference between rural and urban college biological science trainees with reference to their awareness of ICT and its dimensions.

Table 2 Difference between Rural and Urban College Biological Science Trainees with reference to their Awareness of ICT and its Dimensions

Dimensions	Locality of the College	N	Mean	S.D	Calculated 't' value	Remarks at 5% level
Internet awareness	Rural	438	3.71	1.698	2.07	S
	Urban	202	3.41	1.808		
Software awareness	Rural	438	3.42	1.467	0.52	NS
	Urban	202	3.35	1.346		
Computer awareness	Rural	438	6.89	2.992	0.19	NS
	Urban	202	6.84	2.928		
General awareness	Rural	438	8.39	3.155	0.32	NS
	Urban	202	8.48	3.271		
Hardware awareness	Rural	438	5.45	2.346	2.32	S
	Urban	202	4.97	2.601		
Website awareness	Rural	438	3.53	1.682	1.28	NS
	Urban	202	3.72	1.885		
Email awareness	Rural	438	3.01	1.695	2.14	S
	Urban	202	2.70	1.699		
Awareness of ICT in total	Rural	438	33.61	10.367	0.72	NS
	Urban	202	34.26	10.819		

(The table value of 't' is 1.96, S-Significant, NS- Not Significant)

It is inferred from the above table that the calculated 't' value is less than the table value (1.96) for df 638, at 5% level of significance in the dimensions of software awareness, computer awareness, general awareness, website awareness and awareness of ICT in total. Hence the respective null hypothesis is accepted. But there is significant difference in the dimensions of internet awareness, hardware awareness and email awareness. Hence the respective null hypothesis is rejected.

While comparing the mean scores of rural (Mean=3.71, 5.45,3.01) and urban college biological science trainees (Mean=3.41, 4.97,2.70) it is inferred that the rural college biological science students have better in the dimensions of internet awareness, hardware awareness and email awareness than urban college biological science students.

H_o 15: There is no significant difference between Tamil and English medium biological science students with reference to their awareness of ICT and its dimensions.

Table 3 Difference between Tamil and English Medium Biological Science students with reference to their Awareness of ICT and its Dimensions

Dimensions	Medium of Instruction	N	Mean	S.D	Calculated 't' value	Remarks at 5% level
Internet awareness	Tamil	433	3.52	1.724	1.92	NS
	English	207	3.81	1.755		
Software awareness	Tamil	433	3.43	1.403	0.99	NS
	English	207	3.31	1.482		
Computer awareness	Tamil	433	6.48	2.814	4.89	S
	English	207	7.69	3.125		
General awareness	Tamil	433	8.09	3.138	3.78	S
	English	207	9.10	3.196		
Hardware awareness	Tamil	433	4.83	2.349	4.42	S
	English	207	5.73	2.513		
Website awareness	Tamil	433	3.46	1.730	2.78	S
	English	207	3.87	1.762		
Email awareness	Tamil	433	2.80	1.653	0.03	NS
	English	207	2.80	1.802		
Awareness of ICT in total	Tamil	433	32.62	10.080	4.21	S
	English	207	36.31	10.962		

(The table value of 't' is 1.96, S-Significant, NS- Not Significant)

It is inferred from the above table that the calculated 't' value is less than the table value (1.96) for df 638, at 5% level of significance in the dimensions of internet awareness, software awareness and email awareness. Hence the respective null hypothesis is accepted. But there is significant difference in the dimensions of computer awareness, general awareness, hardware awareness, website awareness and awareness of ICT in total. Hence the respective null hypothesis is rejected.

While comparing the mean scores of Tamil medium (Mean=6.48, 8.09, 4.83, 3.46, 32.62) and English medium biological science students (Mean=7.69, 9.10, 5.73, 3.87, 36.31) it is inferred that the English medium biological science students have better in the dimensions of computer awareness, general awareness, hardware awareness, website awareness and awareness of ICT in total than the Tamil medium biological science students.

Results and Discussion

- The table 1 reveals that there is no significant difference between male and female of biological science students with reference to their awareness of ICT and its dimensions.
- The table 2 reveals that there is significant difference between is significant difference in the dimensions of internet awareness, hardware awareness and email awareness. While comparing the mean scores of rural (Mean=3.71, 5.45,3.01) and urban college biological science students (Mean=3.41, 4.97,2.70) it is inferred that the rural college biological science students have better

in the dimensions of internet awareness, hardware awareness and email awareness than urban college biological science students. This may due to the fact that urban students have well family background economically and socially. Most of the parents might be well educated. They encouraged and help their children to promote their education through ICT. The parental support is high for those students, financially and intellectually. And they may get access to Wi-Fi connection, surf the internet, Google+ and blog in their home as well as working environment to get awareness on daily issues.

- The table 3 reveals that there is significant difference between Tamil and English medium biological science students with reference to their awareness of ICT. While comparing the mean scores of Tamil medium (Mean=6.48, 8.09, 4.83, 3.46, 32.62) and English medium biological science students (Mean=7.69, 9.10, 5.73, 3.87, 36.31) it is inferred that the English medium biological science students have better in the dimensions of computer awareness, general awareness, hardware awareness, website awareness and awareness of ICT in total than the Tamil medium biological science students. This may due to the fact that English medium biological science students have getting information through, spouses, peers stake holders and their family members particularly English medium students are have high awareness of ICT.

Conclusion

Information and communication Technology (ICT) has been utilized in all sectors and the field of education is no exception. ICT is a boon to the learners who can enrich themselves according to their interest, attitude, aptitude, pace of learning etc. In the educational institutions, utilization of ICT differs from institution to institution. Taking the findings of the study into consideration, it may be concluded that B.Ed., teacher trainees are aware of ICT and its use in their teacher training programme. This may be due to the availability of resources in the respective colleges. Many research findings indicate that the use of ICT tools in teaching learning process makes the classroom teaching interesting, attractive and helps in retaining the learned material for a longer time. The tremendous changes in the field of ICT demands up-gradation of ICT knowledge and skills. Internet is the best medium to update the knowledge of a teacher so knowledge of internet should be a pre requisites of entering teaching professions .Hence it is essential that B.Ed teacher trainees need to upgrade their knowledge of ICT through various training programme on ICT.

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TECHNO CLASSROOM IN 21st CENTURY

A.S.Kannan

Abstract

The development of IT technology and the internet is important for the development of education technology. Virtual classroom is prevailing now. I analyzed carefully the differences between virtual classroom and the traditional classroom. The result is that traditional classroom is more suitable for our education and the virtual classroom is a proper complementarity. It is not reasonable to replace the traditional classroom with the virtual classroom. One of the surprising discoveries people make when they do an embodiment course is just how little pressure it takes for their bodies to begin to tighten and their minds to narrow. A tiny amount of pressure — evens the simple anticipation of such pressure — initiates a whole cascade of constricting physical and mental reactions. These undeniable experiences lead to an acknowledgement that stress and its effects are not confined to the people that we typically label as 'stressed', or the days we call 'tough'.

Keywords*- traditional classroom; virtual classroom; differences;*

Introduction

In truth, *we are all dealing with stress*, and our survival response is very often laboring away in the background, quietly preparing us for fight, flight or freeze. Often hidden from awareness, it narrows our view of the world, seeks security, and controls our connections to others. It's so woven into our experience of ourselves that, like fish in water, we can hardly see it, or we rationalize it as simply how we and the world are. Chronic or long-term stress and our obvious or hidden ways of coping with it play a big role in shaping the particular presence of a classroom teacher. Even a 'relaxed' teacher is dealing with an enormous range of 'incoming': – demands for their time, energy and attention.

Need of techno centre in class room

Technology gets a bad rep for causing stress and anxiety at work, from feeling pressured to reply to every single email to needing to keep checking social media for fear of 'missing out' on something.But what about the ways in which technology can be used to reduce work-related stress and encourage positive mental health? The Harvard Business Review recently offered some examples of how our devices and platforms can be harnessed for the power of good:

Fear of missing out (FOMO)

Social media has heightened an anxiety already present in many busy professionals: the fear that they're missing out on something, whether that's industry news or an event they weren't able to attend. But social networks have filters in place to hide content from certain people, and Tweetdeck can filter out any tweets relating to a certain topic or event - so you won't have to see what you're missing.

Distraction

This is a key contributor to workplace stress, from constantly checking our phones to amusing articles that steal our attention and cause us to lose focus on our work. Thankfully, tools such as Rescue Time (to track your time spent online); Focus (which blocks certain websites); and Freedom (prevents you from even going online) can help you manage your time and energy more wisely.

University, Assistnat Professor, PSNL College Of Education, Mettamalai, Sattur

Tiring commutes

Long commutes can take their toll on workers, both mentally and physically. But with the right tools, this time can be used to help you unwind, re-energize or get one step ahead of your workload. Newsreaders such as Feedly can keep you up-to-date with current affairs, while Buffer lets you sync up a whole week's worth of Tweets in advance. For those who walk or cycle to work, music and fitness apps can help you maximise this time; while podcasts can help you wind down after a long day.

ICT And Classroom

1. Evernote

If you have a Smartphone, you can and should download this free tool that digitally organizes content. Evernote syncs with your other devices, giving you freedom and flexibility with regards to how you access material. It also allows you to record notes in written, audio and visual form. As if that wasn't enough, it's even designed to be intuitive and extremely user friendly. Because a lack of organization is strongly correlated with high stress levels, using an app such as Evernote to organize your notes and documents can go a long way towards lowering stress. Plus, you should pick up Daniel's Evernote eBook on how to get things done to really lower your stress levels and become more organized and productive!

2. Dropbox

If you're in an occupation requiring you to deal with multiple documents at once, whether you're in the office or away using a mobile device, you should consider giving Dropbox a try. Dropbox functions as a computer folder that syncs automatically with an Internet-based account. This means you can easily access and share your documents with others, eliminating the need for external hard drives and USB sticks. With Dropbox, you no longer have to stress about forgetting to bring that important document to the big meeting. If there were a form of insurance for the content on your computer, this would definitely be it.

3. Windows 7

If you think cloud-computing sounds like a complicated hassle, think again. Cloud My Office gives you safe and secure access to your documents from a variety of devices and desktops, all in a quick and painless process. Plus, the software upgrades and updates are taken care of for you, so you can relax and rest easy without concern over keeping software up to date.

4. Audio Therapy

Another type of stress reliever exists in the form of audio technology, specifically a type of therapy called Binaural Beat therapy. This eases the mind into a deep state of relaxation and focus using varying sound frequencies. The 1960's and 70's saw overwhelmingly positive results when Binaural Beat therapy was performed on people suffering from depression and anxiety. It's recently experienced resurgence in popularity with several various products on the market available for BBT use. If you're interested in trying one, Brain Sync has been highly recommended.

5. Grounding Technology

Through the use of a sheet or mat, grounding technology allows the user to form a connection with the Earth. Although this sounds a bit strange, there's a theory behind it: It's meant to remove the build up of positive ions from our bodies that have been associated with several serious health problems. Many of the people who use grounding technology claim that it effectively boosts their mood, diminishes joint pain and improves their quality of sleep. Check out Earthing.com if you're interested in finding out more.

6. YouTube

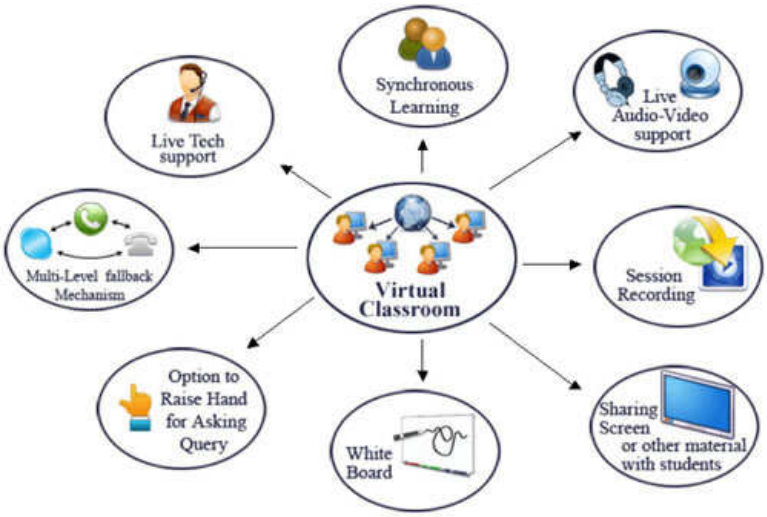
It's well known that laughter can help us relax and lower stress, so next time you're feeling particularly stressed, why not take a brief time-out from work to watch a funny YouTube video? Or, you can check out Vine, a popular app that allows you, your friends and family to create, upload and share videos if you could use a good laugh. If you need less tension and more relaxation in your life, consider giving the ideas posted above a try. After all, you have nothing to lose, except maybe a little stress!

Virtual Class Room

Virtual Classroom is one of the significant features of E-Three Learning Platform (software for online teaching/training). As the term says, it is a class conducted virtually, wherein professors and students attend from their respective remote locations. Virtual Classroom is an online, web-based tool, which virtually creates a classroom environment similar to traditional classroom wherein professors and students login simultaneously. In this classroom professors can deliver lectures, elaborate on course topics, ask and answer questions, conduct group assignments, take quizzes, polls etc. It is an online teaching or training software that utilizes the aforesaid tools and provides enhanced learning/training experience. Thus, virtual classroom gives the students as well as professors/trainers a similar experience like that of traditional classrooms without the need to be physically present, and at the same time offers flexible as well as cost-effective courses.

Virtual Classroom is a web-browser based tool, independent of any other user side software. There are almost no downloads for this tool and this makes the tool time efficient for the user. Professors or students can just browse the link and login to the virtual classroom, just like they walk-in to the traditional classroom. It is equipped with various useful tools to engage participants and make the learning experience similar to traditional classroom with additional benefits of technology thus it is right to say E-Three is the best software for online learning/training.

Virtual Classroom is largely useful as people from diverse geographical locations can be part of the classroom. Thus it is right to say that Virtual Classroom is an online meeting solution that helps people to interact with each other regardless of the geographical barriers. It is considered as an alternative to traditional, location-based classroom, as it saves on expenses of physical infrastructure.



Synchronous Learning

In this type of learning process, students and professors connect and interact with each other in real time. This is indeed a very significant process where students get answers to their queries & questions then and there. Interaction with professors and peers makes the learning process interesting and enriching for students.

Support for live Audio-Video

Audio and video are both enhanced and lucrative features for better understanding in virtual classroom. Various tools are available for text-based chat, verbal interaction through audio conferencing and sharing ones own video through web-camera. Professors can share the audio and video, thus establishing one-to-one relation with students. This builds confidence in students about the pedagogy

methods and allows professors to communicate effectively with the students. Moreover, the students asking questions can share their videos with the fellow students.

Recording class lecture (Session Recording)

The entire classroom session can be recorded in video format and stored in library for future reference. This feature is extremely useful, especially for absent students, who can review the recordings later and understand the concepts elaborated by the professors. Moreover, the students can also refer to the recordings for revision purpose, at their convenience.

White Board

White Board is a tool for drawing graphics or diagrams in virtual classroom. It comes handy when professor wants to visually explain any abstract concept. If any student has a query, which needs some graphical explanation and the professor does not have an apt graphic for it, then even a crude diagram can be extremely beneficial for emphasizing on the concepts.

Sharing of Learning Resources and/or Desktop Screen

The resource-sharing feature in virtual classroom allows professors to share varied content in different formats with the students in real time while delivering lectures on various course topics. This resource sharing feature supports sharing of various file formats - MS Word, MS Excel, PowerPoint Presentations, PDF files, flash presentations, flash videos etc. While teaching, the professors can exhibit all the operations from the desk, by sharing a particular application or the entire desktop. This resource-sharing feature is extremely useful for sharing various course materials like topic notes, subject diagrams or graphs, explanatory videos etc. With this type of supportive and informative course material, learning becomes interesting and gives an interactive experience.

Virtual Classroom is largely useful as people from diverse geographical locations can be part of the classroom. Thus it is right to say that Virtual Classroom is an online meeting solution that helps people to interact with each other regardless of the geographical barriers. It is considered as an alternative to White Board is a tool for drawing graphics or diagrams in virtual classroom. It comes handy when professor wants to visually explain any abstract concept. If any student has a query, which needs some graphical explanation and the professor does not have an apt graphic for it, then even a crude diagram can be extremely beneficial for emphasizing on the concepts.

Characteristics of Virtual Classroom

The ed tech landscape is full of various buzzwords that sometimes it can be hard to really grasp the concepts that are being discussed. For example, one popular movement today being used in the education industry is the virtual classroom, but what exactly does this mean?The idea itself is not that hard to conceptualize, but often the characteristics regarding a virtual classroom are not discussed Below are some of the key components of a virtual classroom. I am sure that this could be expanded upon further, but for the sake of simplicity I have only included what I believe are the most defining A virtual classroom is an online classroom that allows participants to communicate with one another, view presentations or videos, interact with other participants, and engage with resources in work groups.

Non-Restricting

A virtual classroom allows both learners and instructors around the world to participate in live classes to collaborate and interact. MOOC programs like Coursera are a great example of this concept in action.

Affordable

The low costs of virtual classrooms are considered to be a major advantage. Learners can save money by not having to worry about travel expenses. Participants also save time since all that is needed is an internet connection.

Flexible Learning

Online classes also allow for the ability to record class as it happens, including any presentation audio and visuals. This means that the content is accessible even after being delivered, an added benefit for those who want a quick refresher, or perhaps did not fully understand the first time.

Practical and Proven

Synchronous learning is a learning environment where everyone takes part in the learning at the same time. A traditional lecture is an example of this type of learning, and has been used for hundreds of years. Online learning enables this same type of experience, but with far more conveniences and tools.

Accessible

Virtual classrooms can be used to deliver lectures, or even tutorials online. They are also great options for impromptu meetings and group projects where members need to check-in on progress and bounce ideas of one-another. With the virtual environment, ideas and collaborators are never far away.

E-Learning

E-Learning can be defined as 'learning facilitated and supported through the use of ICT'.It can cover a spectrum of activities from the use of technology to support leaning as part of a 'blended' approach to learning (ie)delivered entirely online.

M-Learning

Mobile learning provides a way for educational institutions to deliver knowledge and educational content to students on any platform, anyplace and at the time of need.

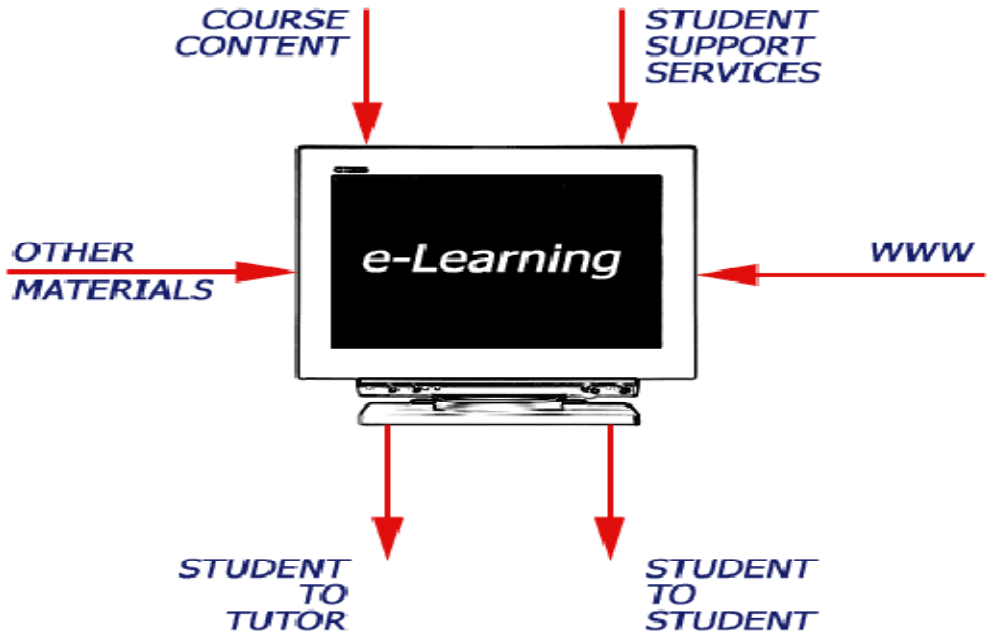


Figure 1 Wired Virtual Learning Environment of Today

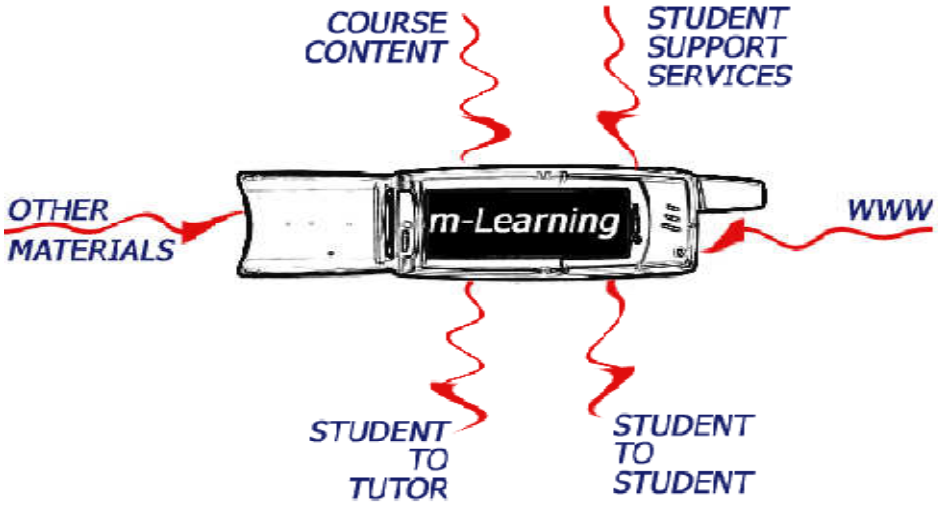


Figure 2 Wireless Virtual Learning Environment of Tomorrow

of communication that postal contact or email. Once this has been achieved the use of mobile learning for academic contact in colleges and universities can be added. Mobile learning academic summaries comprising 4 to 5 screen summaries of content, examination hints, assessment questions for course revision, guidelines for particularly difficult parts of a course or counseling provision for students in need will be of great benefit to all students, and can be developed for and sent out to either all students or students in a particular year or class grouping.

The Value of Techno Classroom

It is important to bring new technology into the classroom.

- Devices used are more lightweight than books and PCs.
- Technology can be used to diversify the types of learning activities students partake in (or a blended learning approach).
- Mobile learning supports the learning process rather than being integral to it.

Benefits of Technology

Technology has become an integral part of our society. It's a part of everything we do including how we learn and teach. To better prepare students for their future careers, using technology in the classroom is essential.

Conclusion

The emergence of new technologies into society created a paradigm of changes within educational circles as many began to understand its significance. This significance was not only realised for the purpose of teachers in schools but more importantly for the future of the students. It became quite clear that the society of today was going to be greatly different to that of the past and so change was needed if educational institutions were to stand up to their name-sake and prepare students for the future. Put it simply, a new society demanded new skills and this meant that technology could play an important role in education.

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ROUTING USING SWARM INTELLIGENCE IN MOBILE AD HOC NETWORKS

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Abstract

Mobile Ad Hoc Networks are communication networks built up of a collection of mobile devices which can communicate through wireless connections. Routing is the task of directing data packets from a source node to a given destination. This task is particulary hard in Mobile Ad Hoc Networks: due to the mobility of the network elements and the lack of central control, routing algorithms should be robust and adaptive and work in a decentralized and selforganizing way. In this paper, we describe an algorithm which draws inspiration from Swarm Intelligence to obtain these characteristics. More specifically, we borrow ideas from ant colonies and from the Ant Colony Optimization framework. In an extensive set of simulation tests, we compare our routing algorithm with a state-of-the-art algorithm, and show that it gets better performance over a wide range of different scenarios and for a number of different evaluation measures. In particular, we show that it scales better with the number of nodes in the network.

Introduction

In communications network research, there is currently an increasing interest for the paradigm of autonomic computing [14]. The idea is that networks are becoming more and more complex and that it is desirable that they can selforganize and self-configure, adapting to new situations in terms of traffic, services, network connectivity, etc.. To support this new paradigm, future network algorithms should be robust, work in a distributed way, be able to observe changes in the network, and adapt to them. Nature's self-organizing systems like insect societies show precisely these desirable properties. Making use of a number of relatively simple biological agents (e.g., the ants) a variety of different organized behaviors are generated at the system-level from the local interactions among the agents

This work was supported by the Future & Emerging Technologies unit of the European Commission through project "BISON: Biology-Inspired techniques for Self Organization in dynamic Networks" (IST-2001-38923) and by the Swiss Hasler Foundation through grant DICS-1830. The robustness and effectiveness of such collective behaviors with respect to variations of environment conditions are key-aspects of their biological success. This kind of systems are often referred to with the term Swarm Intelligence. Swarm systems have recently become a source of inspiration for the design of distributed and adaptive algorithms, and in particular of routing algorithms. Routing is the task of directing data flows from sources to destinations maximizing network performance. It is at the core of all network activities. Several successful routing algorithms have been proposed taking inspiration from ant colony behavior and the related framework of Ant Colony Optimization (ACO) [8]. Examples of ACO routing algorithms are AntNet [6] and ABC [19]. One type of networks where the need for autonomic control is intrinsically necessary are Mobile Ad Hoc Networks (MANETs) [17]. These are networks in which all nodes are mobile and communicate with each other via wireless connections. Nodes can join or leave at any time. There is no fixed infrastructure. All nodes are equal and there is no centralized control or overview. There are no designated routers: nodes serve as routers for each other, and data packets are forwarded from node to node in a multi-hop fashion. The ACO routing algorithms mentioned before were developed for wired networks. They work in a distributed and localized way, and are able to observe and adapt to changes in traffic patterns. However, changes in MANETs are much more drastic: in addition to variations in traffic, both topology and number of nodes can change continuously.

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Further difficulties are posed by the limited practical bandwidth of the shared wireless channel: although the data rate of wireless communication can be quite high, algorithms used for medium access control, such as IEEE 802.11 DCF[12] (the most commonly used in MANETs), create a lot of overhead both in terms of control packets and delay, lowering the effectively available bandwidth. The challenges of autonomic control are therefore much bigger, and new designs are necessary to guarantee even the basic network functions. In the following, we describe AntHocNet, an ant inspired algorithm for routing in MANETs. Building on ideas from previous work on ACO routing, in combination with techniques from dynamic programming, it is tailored to deal with the challenges posed by the extreme dynamics of MANET environments. We compare the algorithm with traditional approaches and show its superiority especially under those conditions where the difference with wired networks is more evident. We also present results indicating that the algorithm is remarkably scalable. The rest of this article is organized as follows. First we introduce some necessary background, next we describe the algorithm, and finally we present the results of an extensive simulation study.

Scientific Background

In this section we discuss some issues related to the work presented in this paper, and introduce some notions which will be used in the rest of this paper.

MANET routing algorithms

Many MANET routing algorithms have been proposed. In the literature, the classical distinction is between table-driven and demand-driven algorithms [17]. Table-driven algorithms, such as DSDV [15], are purely proactive: all nodes try to maintain routes to all other nodes at all times. This means that they need to keep track of all topology changes, which can be difficult if there are a lot of nodes or if they are very mobile. Demand-driven algorithms, such as AODV [16], are purely reactive: nodes only gather routing information when a data session to a new destination starts, or when a route which is in use fails. Reactive algorithms are in general more scalable [4] since they reduce routing overhead, but they can suffer from oscillations in performance because they are never prepared for disruptive events. In practice, many algorithms are hybrid (e.g. ZRP [11]), using both proactive and reactive components. Also AntHocNet can be described as a hybrid algorithm.

Stigmergic learning and ACO routing

Stigmergy is a form of distributed control based on indirect communication among agents which locally modify the environment and react to these modifications leading to a phase of global coordination of the agent actions [21]. The local environment's variables whose values determine in turn the characteristics of the agents' response, are called stigmergic variables. An example of a stigmergic process is the mechanism used by ant colonies to find the shortest path between their nest and a food source [10, 8]. The main catalyst of this colony-level shortest path behavior is the use of a volatile chemical substance called pheromone, which acts as a stigmergic variable: ants moving back and forth between the nest and a food source lay pheromone, and preferentially move towards areas of higher pheromone intensity. Shorter paths can be completed quicker and more frequently by the ants, and are therefore marked with higher pheromone intensity. These paths can then attract more ants, which in turn increases the pheromone level. The overall effect is a distributed reinforcement learning [20] process which eventually allows the majority of the ants to converge onto the shortest path. The ant colony shortest path behavior has attracted a lot of attention, and has been reverse-engineered in the context of ACO [8]. For this paper, we are interested in the application of ACO for routing [5]. In ACO routing algorithms, routing information is gathered through a stigmergic learning process using ant agents. These are lightweight agents which are generated concurrently and independently by the nodes, with the task to sample path to an assigned destination. An ant going from its source s to a destination d collects information about the quality of the path it follows (e.g. end-to-end delay), and, retracing its way back from d to s, uses this to update the routing information at intermediate nodes. Following the datagram model of IP networks, routing

information is expressed in the form of tables kept locally at each node. The routing table T i at node i is a matrix, where each entry T i nd ∈ R of the table is a value indicating the estimated goodness of going from i over neighbor n to reach destination d. These table entries play the role of stigmergic variables in the learning process: an ant agent sampling a path to its destination d makes a stochastic routing decision at each node, giving higher probability to decisions with high goodness, while an ant retracing its way back from d to s updates the table entries influencing the routing of other ants. The routing tables are therefore also called pheromone tables and the goodness values pheromone values. Data packets are routed more or less in the same way as ants: packets are routed stochastically, choosing with a higher probability those links associated with higher pheromone values. The result is automatic balancing of the data load over the network.

Information bootstrapping

The way ACO routing algorithms gather information could be described as a Monte Carlo learning process: ants try out complete paths from source to destination, and gather information about it. Hence, the estimated goodness values for routing decisions recorded in the pheromone tables are the result of the direct experiences of the ants. In the reinforcement learning [20] literature, Monte Carlo learning is often contrasted with a different learning paradigm, namely information bootstrapping. Bootstrapping is a characteristic of dynamic programming. Nodes estimate the cost-to-go of a path by combining the cost estimates made by neighboring nodes and the cost to go to those neighboring nodes, rather than by the direct sampling of a full path. Information bootstrapping is the typical mode of operation in classical Bellman-Ford routing algorithms [1], as well as in derived table-driven algorithms like DSDV, and some reinforcement learning inspired approaches to routing, like Q-routing [3]. Compared to Monte Carlo sampling, bootstrapping is more efficient in a stationary environment. However, in a dynamic environment it can be unreliable, because wrong information can arise from combining new and old estimates, and because errors can easily propagate since estimates are built up using other estimates. In AntHocNet, we attempt to combine the best of both learning methods: the Monte Carlo sampling of paths by ants is supported by a lightweight information bootstrapping process which provides a second way of building up goodness estimates. This bootstrapping process, which we call pheromone diffusion, and its interaction with the Monte Carlo sampling process, is described in detail in subsection 3.3.

Description of the Algorithm

AntHocNet's design is inspired by ACO routing algorithms for wired networks. It uses ant agents which follow and update pheromone tables in a stigmergic learning process. Data packets are routed stochastically according to the learned tables. An important difference with other ACO routing algorithms is that AntHocNet is a hybrid algorithm, in order to deal better with the specific challenges of MANET environments. It is reactive in the sense that nodes only gather routing information for destinations which they are currently communicating with, while it is proactive because nodes try to maintain and improve routing information as long as communication is going on. We make a distinction between the path setup, which is the reactive mechanism to obtain initial routing information about a destination at the start of a session, and path maintenance and improvement, which is the normal mode of operation during the course of a session to proactively adapt to network changes. Path maintenance and improvement is supported by the pheromone diffusion process mentioned in 2.3: the routing information obtained via stigmergic learning is spread between the nodes of the MANET in an information bootstrapping process to provide secondary guidance for the learning agents. Link failures are dealt with using a local path repair process or via notification messages. In the following we provide a concise description of each of these components. A more detailed description of the AntHocNet algorithm can be found in [7, 9].

Pheromone tables

Paths are implicitly defined by the pheromone tables which are kept locally at each node. An entry T i nd ∈ R of the pheromone table T i at node i contains a value indicating the estimated goodness of going from i over neighbor n to reach destination d. This goodness is a combined measure of path end-to-end delay and number of hops. These are two commonly used quality measures in MANETs. Combining them is also a way to smooth out possibly large oscillations in the time estimates gathered by the ants (e.g., due to local bursts of traffic). Since AntHocNet only maintains information about destinations which are active in a communication session, and the neighbors of a node change continually, the filling of the pheromone tables is sparse and dynamic.

Proactive path Maintenance and Exploration

During the course of a communication session, source nodes send out proactive forward ants to update the information about currently used paths and to try to find new and better paths. They follow pheromone and update routing tables in the same way as reactive forward ants. Such continuous sampling of paths and pheromone updating by ants is the typical mode of operation in ant inspired routing algorithms. However, in MANET environments, characterized by constant changes, the needed ant sending frequency would be quite high, so that the process would get in conflict with the typically limited bandwidth in such networks. Moreover, to find entirely new paths, too much blind exploration through random walks or broadcasts would be needed, again leading to excessive bandwidth consumption. Therefore, we introduce at this point the supporting pheromone diffusion function which allows spreading pheromone information over the network. This process provides a second way of updating pheromone information about existing paths, and can give information to guide exploratory behavior. The pheromone diffusion is implemented using short messages, broadcast periodically and asynchronously by the nodes to all their neighbors. In these messages, the sending node n places a list of destinations it has information about, including for each of these destinations d the best pheromone value T n m∗d,m∗ ∈ Nn d , which n has available for d. A node i receiving the message from n first of all registers that n is its neighbor. Then, for each destination d listed in the message, it derives an estimate of the goodness of going from i to d over n, combining the cost of hopping from i to n with the reported pheromone value T n m∗d. We call the obtained estimate the bootstrapped pheromone variable Bind, since it is built up using an estimate which is non-local to i (see subsection 2.3). This bootstrapped pheromone variable can in turn be forwarded in the next message sent out by n, giving rise to a bootstrapped pheromone field over the MANET. This field is complementary to the field of regular pheromone, learned via ant-based Monte Carlo sampling. Bootstrapped pheromone is used directly for the maintenance of existing paths. If i already has a regular pheromone entry T i nd in its routing table for destination d going over neighbor n, Bind is treated as an update of the goodness estimate of this path, and is used directly to replace T i nd. Due to the slow multi-step forwarding of bootstrapped pheromone, this information does not provide the most accurate view of the current situation. However, it is obtained via a lightweight, efficient process, and is complemented by the explicit path updating done by the ants. In this way we have two updating frequencies in the path maintenance process. For path exploration, bootstrapped pheromone is used indirectly. If i does not yet have a value for T i nd in its routing table, Bind could indicate a possible new path from i to d over n. However, this path has never been sampled explicitly by an ant, and due to the slow multi-step pheromone bootstrapping process it could contain undetected loops or dangling links. It is therefore not used directly for data forwarding. It is seen as a sort of virtual pheromone, which needs to be tested. Proactive forward ants will use both the regular and the virtual pheromone on their way to the destination, so that they can test the proposed new paths. This way, promising virtual pheromone is investigated, and can be turned into a regular path which can be used for data. This increases the number of paths available for data routing, which grows to a full mesh, and allows the algorithm to exploit new opportunities in the ever changing topology.

Stochastic Data Routing

Nodes in AntHocNet forward data stochastically according to the pheromone values. When a node has multiple next hops for the destination d of the data, it randomly selects one of them, with probability Pnd. Pnd is calculated like for reactive forward ants, using equation 1. However, a higher value for the exponent β is used in order to be greedy with respect to better paths. According to this strategy, we do not choose a priori how many paths to use: their number is automatically selected in function of their quality. This probabilistic routing strategy leads to data load spreading according to the estimated quality of the paths. When a path is worse than others, it is avoided, and its congestion is relieved. Other paths get more traffic, leading to higher congestion, which makes their delay increase. If estimates are kept up-to-date, this leads to automatic load balancing.

Link Failures

Nodes can detect link failures (e.g., a neighbor has moved away) when unicast transmissions fail, or when expected periodic pheromone diffusion messages were not received. When a node i discovers the disappearance of a neighbor n, it takes a number of actions. In the first place, i register that n is no longer a neighbor, and removes all associated entries from its pheromone table. Next, i broadcast a link failure notification message. This message contains a list of the destinations to which i lost its best path, and the new best pheromone to this destination (if it still has entries for the destination). All its neighbors receive the message and update their pheromone table using the new estimates. If they in turn lost their best or their only path to a destination, they will pass the updated message on to their neighbors, until all concerned nodes are notified of the new situation. If i detected the link failure via the failed transmission of a data packet, and it has no further paths available for the destination of this packet, it starts a local route repair. i broadcasts a route repair ant that travels to the involved destination like a reactive forward ant: it follows available routing information when it can, and is broadcast otherwise. One important difference is that it has a restricted number of broadcasts so that its proliferation is limited. If the local repair fails, i broadcasts a new link failure notification message to warn its neighbors.

Experimental Results

We evaluate our algorithm in a number of simulation tests. We compare its performance with AODV [16] (with local route repair), a state-of-the-art MANET routing algorithm and a de facto standard. As simulation software, we use QualNet, a commercial simulation package [18]. We study the behavior of the algorithm in function of a number of different properties of the network scenario. All of the test scenarios are obtained by varying parameters in a specific base scenario. In this base scenario, 100 nodes move in a flat, rectangular area of 3000 × 1000 m2. Movement patterns are generated according to the random waypoint mobility model (RWP) [13]: they choose a random destination point and a random speed, move to the chosen point with the chosen speed, and rest there for a fixed amount of pause time before they choose a new destination and speed. The speed is chosen between 0 and 20 m/s, and the pause time is 30 seconds. Each simulation runs for 900 seconds. 20 different Constant Bit Rate sources start sending at a random time between 0 and 180 seconds and keep sending till the end. At the Medium Access Control layer, the IEEE 802.11b DCF protocol is used. As measures of performance, we use the average end-to-end delay for data packets and the ratio of correctly delivered versus sent packets. These are standard measures of effectiveness in MANETs. We also report delay jitter, the average difference in inter-arrival time between packets. As measure of efficiency, we consider routing overhead, in terms of number of control packets forwarded per successfully delivered data packet. We investigate AntHocNet's performance for varying levels of mobility and node density, for increasing network sizes, and for different data traffic patterns. At the end of the section, we also show results reporting the performance of the algorithm at a smaller time scale: following the evolution of the end-to-end delay over the course of a simulation session while some disruptive events take place, we attempt to give an idea of the adaptivity of the algorithm. To obtain scenarios with different levels of mobility, we vary the pause time. Higher pause time means lower mobility, but also lower connectivity (due to specific properties of RWP mobility, see

[2]). The results are reported in figures 1 and 2. AntHocNet shows much better effectiveness than AODV, in terms of average delay, delivery ratio, and jitter. AODV has better efficiency, measured as routing overhead, but the difference is rather small. The bad performance for high pause times are due to the reduced connectivity. Different node density levels are obtained by keeping the area size constant and increasing the number of nodes. The results of these tests are reported. Again, AntHocNet performs better than AODV in terms of average end-to-end delay and delivery ratio, and the difference increases with the density. In terms of overhead, AntHocNet is worse than AODV for low densities, but better for high densities. Jitter was not reported here, nor for the remaining tests, due to space limitations. It always follows more or less the trend visible for delay and delivery ratio. For different network sizes, we increase the number of nodes (up to 800) and the area size together, keeping the node density constant. AntHocNet's advantage over AODV in terms of average delay and delivery ratio grows with the size of the network.

AntHocNet's overhead grows less fast than that of AODV. This is an important result which indicates that AntHocNet is more scalable with respect to the number of nodes. For all the previous tests the data traffic consisted of 20 randomly placed CBR sessions. We did tests with 20 and 50 sessions. The sessions are organized around a number of hot spots: 20 (or 50) randomly chosen CBR sources send to a limited number of different destinations. This number of destinations was increased from 1 up to the total number of sessions (corresponding to the randomly placed traffic we used before). Organizing traffic sessions around hot spots reflects the typical situation where traffic is concentrated around a number of important nodes. Again we observe an advantage for AntHocNet in terms of average delay and delivery ratio. This advantage is smaller for the easier scenarios where traffic is concentrated on a low number of hot spots. For the tests with 20 sessions, AntHocNet has higher overhead than AODV, while for those with 50 sessions the picture is more balanced. For the last test, we report the evolution of the end-toend delay over the course of a test run in which some important events take place. In this test, 10 randomly chosen sources start to send to the same hot spot between 100 and 110 seconds after the start of the simulation, and keep on sending till the end. After 300 seconds, 20 new sources start to send to a different hot spot. 200 seconds later they stop sending again. All sources send four 64 byte packets per second. Figure 6 shows for one communication session how the end-to-end delay, averaged per 10 seconds, evolves throughout the simulation. The arrival of 20 new sessions after 300 seconds is clearly visible and leads to a long period of unstable behavior: the congestion caused by the high data load can cause strong fluctuations for the delay. AntHocNet's behavior is much smoother than that of AODV however. After the end of the 20 sessions, at second 500, the situation stabilizes again, but faster for AntHocNet than for AODV. The slow decrease of the delay under stable conditions (from 100 till 300 seconds, and from 500 till 850) is due to normal topology changes inside the MANET.

Conclusions

In this paper we have described AntHocNet, a routing algorithm for MANETs which was inspired by ideas from Swarm Intelligence, and more specifically by the framework of ACO. The algorithm combines reactive and proactive behavior to deal with the specific challenges of MANETs in an efficient way. Routing information is learned through Monte Carlo sampling of paths using repeatedly and concurrently generated ant agents, as is common in ACO routing algorithms. This learning process is supported by a secondary process, called pheromone diffusion. Pheromone diffusion provides an alternative way to learn pheromone information, using an information bootstrapping mechanism rather than Monte Carlo sampling. It is used to help update pheromone on existing paths and to provide guidance to ants in search of new paths.

We have evaluated the algorithm in an extensive set of simulation tests. The tests were carried out in a commercial simulator and comparisons were each time made with AODV, a de facto standard in the community. AntHocNet was shown to outperform AODV over the wide range of tested scenarios in terms of delivery ratio, average end-toend delay and average jitter, while generating a comparable amount of

control overhead. An important observation was that the advantage of AntHocNet over AODV grew for larger networks, especially in terms of overhead, suggesting that AntHocNet is more scalable than AODV.

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EMERGING ISSUES IN INORMATION COMMUNICATION AND TECHNOLOGY

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Abstract

A number of other issues have emerged from the uptake of technology whose impacts have yet to be fully explored. These include changes to the makeup of the teacher pool, changes to the profile of who are the learners in our courses and paramount in all of this, changes in the costing and economics of course delivery.

Introduction

a. Expanding the pool of teachers

In the past, the role of teacher in an educational institution was a role given to only highly qualified people. With technology-facilitated learning, there are now opportunities to extend the teaching pool beyond this specialist set to include many more people. The changing role of the teacher has seen increased opportunities for others to participate in the process including workplace trainers, mentors, specialists from the workplace and others. Through the affordances and capabilities of technology, today we have a much expanded pool of teachers with varying roles able to provide support for learners in a variety of flexible settings. This trend seems set to continue and to grow with new ICT developments and applications. And within this changed pool of teachers will come changed responsibilities and skill sets for future teaching involving high levels of ICT and the need for more facilitative than didactic teaching roles (eg. Littlejohn etal., 2002).

b. Expanding the pool of students

In the past, education has been a privilege and an opportunity that often was unavailable to many students whose situation did not fit the mainstream. Through the flexibilities provided by technology, many students who previously were unable to participate in educational activities are now finding opportunities to do so. The pool of students is changing and will continue to change as more and more people who have a need for education and training are able to take advantage of the increased opportunities. Interesting opportunities are now being observed among, for example, school students studying university courses to overcome limitations in their school programs and workers undertaking courses from their desktops.

c. The cost of education

Traditional thinking has always been that technology-facilitated learning would provide economies and efficiencies that would see significant reductions in the costs associated with the delivery of educational programs. The costs would come from the ability to create courses with fixed establishment costs, for example technology-based courses, and for which there would be savings in delivery through large scale uptake. We have already seen a number of virtual universities built around technology delivery alone (eg. Jones International University,). The reality is that few institutions have been able to realize these aims for economy. There appear to have been many underestimated costs in such areas as course development and course delivery. The costs associated with the development of high quality technology-facilitated learning materials are quite high. It has found to be more than a matter of repackaging existing materials and large scale reengineering has been found to be necessary with large scale costs. Likewise costs associated with delivery have not been found to diminish as expected. The main reason for this has been the need to maintain a relatively stable student to staff ratio and the expectation of students that they will have access to teachers in their courses and programs.

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Compared to traditional forms of off-campus learning, technology-facilitated learning has proven to be quite expensive in all areas of consideration, infrastructure, course development and course delivery. We may have to brace ourselves for the advantages and affordances which will improve the quality of education in the near future to also increase components of the cost.

The Nature of the Digital Divide in Learning

Ample illustrations of the digital divide in learning were put forward during the Fifth NCAL/OECD Roundtable, The Lifelong Learning and New Technologies Gap: Reaching the Disadvantaged, December 1999. The Roundtable's illustrations of the digital divide show that there is no single, clearly-defined divide, but rather a series of gaps, brought about by a variety of factors, many of which do not have their roots in the technology itself. Perhaps the most obvious manifestations of the learning digital divide are the ICT gaps that exist within formal education, between one school or school district and another, in terms of the equipment, materials, connectivity, professional competence, and integration of ICT within the teaching/learning environment. There is an important role for schools and other educational institutions to ensure equality of access to ICT, and thereby to raise technological literacy throughout the student population – a basic learning aim. It has to be noted that many aspects of the digital divide are determined by ICT access and use outside the formal system, but as a number of participants recognised, schools and other educational institutions can play a compensatory equalising role. There are aspects of the divide which are profoundly social rather than technological. The differences across societal groups in terms of ICT skills, confidence and competence show that while the necessary ICT investments must first be in place, it is vitally important to empower people to use them. Gender is clearly one important dimension in relation to the digital divide, along with technology learning gaps among different generations, economic groups, ethnicities, and cultural communities. Formal educational policies that aim to bridge the digital divide risk leaving untouched some of the most influential aspects – notably the home differences in computer and Internet access. Many relatively privileged students are already active in out-of-school electronic networks, thereby furthering their own education and hence their advantage. This view clearly shows the need to bridge home-related inequalities. There are also the very wide national disparities, between the richest countries of the world (notably the United States to which most of the existing data relate), and other countries with much lower or minimal technology use in education, homes, enterprises and communities. In consequence there is an international dimension to the digital divide, including a gulf between North and South, which leaves poorer countries disadvantaged. As with other manifestations of the digital divide, the tendency appears to be that the most privileged are able to enhance their advantage.

Conclusion

This paper has sought to explore the role of ICT in education as we progress into the 21 st century. In particular the paper has argued that ICTs have impacted on educational practice in education to date in quite small ways but that the impact will grow considerably in years to come and that ICT will become a strong agent for change among many educational practices. Extrapolating current activities and practices, the continued use and development of ICTs within education will have a strong impact on What is learned, How it is learned, When and where learning takes place, Who is learning and who is teaching. The upshot of all this activity is that we should see marked improvements in many areas of educational endeavour. Learning should become more relevant to stakeholders' needs, learning outcomes should become more deliberate and targeted, and learning opportunities should diversity in what is learned and who is learning. At the same time, quality of programs as measured by fitness for purpose should continue to grow as stakeholder groups find the offerings matched to their needs and expectations. To ensure that the opportunities and advantages are realized, it will be important as it is in every other walk of life to ensure that the educational research and development dollar is sustained so that education at large can learn from within and that experiences and activities in different institutions and sectors can

inform and guide others without the continual need for re-invention ofthe wheel. Once again ICTs serve to provide the means for much of this activity to realize the potential it holds.

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DEVELOPING ICT LITERACY IN TEACHERS

S. Saranya

Abstract

This paper focuses on developing information and communication Technology (ICT) Literacy in Teachers. Skills needed in the workplace of the future generation learning. ICT transforms learning environment: active, collaborative, creative, integrative and evaluative learning. This paper looks at the contribution that ICT can make to quality in teaching, learning and evaluation through improvements in cognition, pedagogies, culture and data for the information society. ICT does not automatically add quality. There is however, growing evidence that ICT application to the core business of education can accelerate and improve learning on a number of fronts. It can also provide the means of gathering, connecting and analyzing data about teaching and learning in ways that enable us to more accurately diagnose student need and evaluate programs. To apply ICT in these ways requires changed approaches by educators to improve the quality of education and training.

Introduction

In the 21st century information economy and knowledge society, the need for the development of ICT literacy in teachers and students cannot be ignored. Information literacy as the ability to adapt to an information society and to use electronic equipment, including computers, multi-functional telephones and other modern communication tools, in order to access information as needed. Developing ICT literacy not only allows for the access and navigation of information but also self-directed learning, as it has the potential to free students from the constraints of time and space. It includes the ability to search for, manage and retrieve information rapidly and to work collaboratively with others. Teachers need to be skilled in the production of education materials in the form of hypermedia as these can improve classroom pedagogy and learning. ICT also has the potential to impact the ways teachers collect and compile student work and information, as well as to provide different avenues for student learning. In the area of formative assessment, technology can provide teachers with data in a manner that will enable them to offer better pedagogical choices and be better facilitators of learning.

Skills Needed in the Workplace of the Future

Scientific Literacy

Understanding of both the theoretical and applied aspects of science and mathematics

Technological Literacy

Competence in the use of information and communication technologies

Information Literacy

Ability to find, evaluate and make appropriate use of information, including via the use of icts

Cultural Literacy

Appreciation of the diversity of cultures

Global Awareness

Understanding of how nations, corporations, and communities all over the world are interrelated

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Inventive Thinking

Adaptability	Ability to Adapt And Manage In A Complex, Interdependent World
Curiosity	Desire to Know
Creativity	ability to use imagination to create new things
Risk-taking	ability to take risks
Higher-order	creative problem-solving and logical thinking that result in sound judgments thinking

Effective Communication

Teaming Ability to work in a team Collaboration and Ability to interact smoothly and work effectively with others interpersonal skills Personal and social Be accountable for the way they use ICTs and to learn to use ICTs for the responsibility public good Interactive Competence in conveying transmitting accessing and understanding information communication High Productivity Ability to prioritize, plan, and manage programs and projects to achieve the desired results Ability to apply what they learn in the classroom to real-life contexts to create relevant, high-quality products

Learner-centered environment active learning

ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner's life situation. In this way, and in contrast to memorization-based or rote learning, ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning is also "just-in-time" learning in which learners can choose what to learn when they need to learn it.

Collaborative learning

ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real-world interactions, ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners' teaming and communicative skills as well as their global awareness. It models learning done throughout the learner's lifetime by expanding the learning space to include not just peers but also mentors and experts from different fields.

Creative learning

ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the regurgitation of received information.

Integrative learning

ICT-enhanced learning promotes a thematic, integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach.

Evaluative learning

ICT-enhanced learning is student-directed and diagnostic. Unlike static, text- or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember.

Digital Age Literacy

Functional literacy Ability to decipher meaning and express ideas in a range of media; this includes the use of images, graphics, video, charts and graphs or visual literacy.

Scientific literacy	Understanding of both the theoretical and applied aspects of Science and
	Mathematics
Technological literacy Competence in the use of information and communication technologies	
Information literacy	Ability to find, evaluate and make appropriate use of information, including via
	the use of ICTs
Cultural literacy	Appreciation of the diversity of cultures
Global awareness	Understanding of how nations, corporations, and communities all over the
	world are interrelated
Inventive Thinking	
Adaptability	Ability to adapt and manage in a complex, interdependent world
Curiosity	Desire to know
Creativity	Ability to use imagination to create new things
Risk-taking	Ability to take risks
Higher-Order Thinking	Creative problem-solving and logical thinking that result in sound judgments

Traditional Pedagogy Versus Emerging Pedagogy

Aspect	Less('traditional pedagogy')	More ('emerging pedagogy' for the information society)
Active	• Activities prescribed by teacher • Whole class instruction • Little variation in activities • Pace determined by the programme	• Activities determined by learners • Small groups • Many different activities • Pace determined by learners
Collaborative	* Individual * Homogenous groups * Everyone for him/herself	• Working in teams • Heterogeneous groups • Supporting each other
Creative	* Reproductive learning • Apply known solutions to problems	• Productive learning • Find new solutions to problems
Integrative	• No link between theory and practice • Separate subjects • Discipline-based • Individual teachers	• Integrating theory and practice • Relations between subjects • Thematic • Teams of teachers
Evaluative	• Teacher-directed • Summative	• Student-directed • Diagnostic

Improving the quality of teacher education and training

ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment. The use of ICTs in teacher education generally approaches the following to the instructional use of computers and the Internet namely: Learning about computers and the Internet focuses on developing technological literacy; Learning with computers and the Internet, in which the technology facilitates learning across the curriculum; Learning through computers and the Internet, integrating technological skills development with curriculum applications and Learning through broadcasting technologies and training.

Learning about Computers and the internet

Fundamentals: basic terms, concepts and operations, Use of the keyboard and mouse, Use of productivity tools such as word processing, spreadsheets, database and graphics programs, Use of research and collaboration tools such as search engines and email, Basic skills in using programming and authoring applications such as Logo or Hyper Studio, Developing an awareness of the social impact of technological change.

Learning with Computers and the internet

Presentation, demonstration, and the Manipulation of data using productivity tools, Use of curriculum-specific applications types such as educational games, drill and practice, simulations, tutorials, virtual laboratories, visualizations and graphical representations of abstract concepts, musical composition, and expert systems, Use of information and resources on CD-ROM or online such as encyclopedia, interactive maps and atlases, electronic journals and other references

Learning Through Computers and the Internet

Learning through computers and the Internet combines learning about them with learning with them. It involves learning the technological skills "just-in-time" or when the learner needs to learn them as he/she engages in a curriculum-related activity.

Learning Through Broadcasting Technologies

Learning through Radio and television has been used widely as educational tools. It has also been used to improve access to and the quality of teacher training.

Example

The World Wide Web is a classic example of hypermedia.

Advantages

Training teachers to learn about ICT, Provides new platforms for enhancing teaching and learning, Provide better teacher professional development opportunities to teachers, Emerging pedagogy for the information society, Enable Interactive and Collaborative learning.

Disadvantages

Teacher education cannot develop the use of ICT without the infrastructure and funding to support it, Teacher educators are a key element in establishing the use of ICT in education and teacher Education. But many teacher educators themselves lack skills and training in the use of ICT or the equipment to apply and develop their knowledge and skills, once gained.

National policies, strategies and plans need to be integrated into the teacher education curriculum for initial teacher education and in priorities and funding allocation for continuing professional development.

Remedies

One of the greatest challenges in ICT use in education is balancing educational goals with economic realities. The following remedies are potential sources of money and resources for ICT use programs:

1. Grants, Public subsidies, Private donations, fund-raising events, Membership fees
2. In-kind support (e.g., equipment, volunteers), Community support (e.g. rent-free building)
3. Core business activities:
    - Direct computer access to users, Connectivity (phone, fax, Internet, web pages)
    - Office services (photocopying, scanning, audiovisual aids)
4. Ancillary activities:

- Business services (word-processing, spreadsheets, budget preparation, printing, reception services), Educational services (distant education, training courses).

Conclusion

ICT's enable teachers to better meet instructional and professional challenges; that systems need to be innovative in attracting high quality and representative applicants and in constantly improving the design and delivery of teacher education programmes; that a widened framework for teacher induction be adopted to build upon *foundational skills* and that opportunities be created for more relevant, powerful and teacher-owned professional development; and that new challenges in improving schooling and student achievement need new partnerships which governments can help resource, facilitate and, where appropriate, initiate. Therefore, it is fundamentally necessary for teacher education to continually innovate in order to respond to the ever-changing needs. Technology has the potential to release teaching and learning from the constraints of space and time, allowing for "anytime anywhere" learning.

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DECISION TREE AND NEURAL NETWORK CLASSIFICATION IN DATA MINING: AN OVERVIEW

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Abstract

The overall goal of the data mining process is to extract information from a data set and transform it into an understandable structure for future use. Over the past two decades, the astonishing evolution of data mining technique has imposed a major impact on the revolution of human's lifestyle by predicting behaviors and future trends on everything which can convert stored data into meaningful information. In this paper, the concept of data mining was summarized and its significance towards its methodologies was illustrated. The data mining based on decision tree and Neural Network is surveyed in detail. This paper also oversight a formal review of the algorithm from decision tree and neural networks.

Keywords-*Data Mining, Classification, Decision Tree, Neural Networks, ID3,C4.5,C5 algorithms.*

Introduction

Data Mining is defined as extracting information from huge sets of data or else data mining is the procedure of mining knowledge from data. The information or knowledge extracted can be used for any of the following applications: Market Analysis , Fraud Detection ,Customer Retention ,Production Control , Scientific Exploration etc., It is the process of exploration and analysis, by automatic or semiautomatic means, of large quantities of data in order to discover meaningful patterns and rules. The goal of this advanced analysis process is to extract information from a data set and transform it into an understandable structure for further use. Data mining is also stated as essential process where intelligent methods are applied in order to extract the data patterns. We are living in the information age, because we believe that information leads to power and success, and thanks to sophisticated technologies such as computers, satellites, etc., we have been collecting tremendous amounts of information. Initially, with the advent of computers and means for mass digital storage, we started collecting and storing all sorts of data, counting on the power of computers to help sort through this amalgam of information. Today, we have far more information than we can handle: from business transactions and scientific data, to satellite pictures, text reports and military intelligence. Information retrieval is simply not enough anymore for decision-making. Confronted with huge collections of data, we have now created new needs to help us make better managerial choices. These needs are automatic summarization of data, extraction of the "essence" of information stored, and the discovery of patterns in raw data. It is data processing with good data search capabilities and statistical algorithms to discover patterns and correlations in large database. It is a way to discover new meaning in data. Classification and prediction are two forms of data analysis that can be used to extract models describing the important data classes or to predict the future data trends. Such analysis can help to provide us with a better understanding of the data at large. In this paper we have to seen about classification techniques.

Classification

Data mining term is mainly used for the specific set of six activities namely classification, estimation, prediction, affinity grouping or association rules, clustering, description and visualization. The first three tasks classification, estimation and prediction are all examples of directed data mining or supervised learning. Classification is a data mining function that assigns items in a collection to target categories or classes.

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The goal of classification is to accurately predict the target class for each case in the data. Classification consists of predicting certain outcome based on given input. It is systematic approach to built classified model from input data. Classification makes use of mathematical technique such as decision tree, linear programming, neural networks, and statistic. Classification process involve two phase which are learning phase, classification phase. In learning phase training data are analysed by classification algorithm to produce the unknown result. Test data is used to estimate the accuracy of class rules. These algorithm is analyses the input to produce the prediction.

Decision Tree

Decision tree algorithm has been successfully used in different systems in capturing knowledge. DT is a tree in which each internal node contain the question. That has a finite number response for example we could use question whose the answer are true or false, yes or no, and multiple choice. Each possible answer to that question correspond the child of that node. Each child might be addition question or conclusion. Nodes that are conclusion are leaf node. DT is a flow chart like tree structure. Each node denotes testing of an attribute value. Each branch represent outcome of test, leaves represent decision.

We can easily derive the rules corresponding to the tree by leaves of the tree may refer to the same class labels, but each leaf refers to different rule. DTs are attractive in data mining as they represent rules which can readily be expressed in natural language. The major strength of the DT methods is the following: DT is able to generate understandable rules, they are able to handle both numerical and categorical attributes, and they provide a clear indication of which fields are most important for prediction or classification. Some of the weakness of DT is: First one is some DT can only deal with binary valued target classes, others are able to assign records to an arbitrary number of classes, but is error prone when the number of training examples per class gets small. This can happen rather quickly in a tree with many levels and many branches per node. Second the process of growing a DT is computationally expensive. At each node, each candidate splitting fields is examined before its best split can be found.

Classification tree also called decision tree are especially attractive in a data mining environment for several reasons. First due to their intuitive representation, the resulting classification model is easy to assimilate by human. Second DT trees do not require any parameter setting from the user and thus are especially suited for exploratory knowledge discovery. Third, DT can be constructed relatively fast and the accuracy of DT is comparable or superior to other classification models.

Decision Tree learning algorithm

Decision tree learning is a method for approximating discrete-valued target functions, in which the learned function is represented by a decision tree. Decision tree learning is one of the most widely used and practical methods for inductive inference'. (Tom M. Mitchell, 1997, p52) Decision tree learning algorithm has been successfully used in expert systems in capturing knowledge. The main task performed in these systems is using inductive methods to the given values of attributes of an unknown object to determine appropriate classification according to decision tree rules. Decision trees classify instances by traverse from root node to leaf node. We start from root node of decision tree, testing the attribute specified by this node, then moving down the tree branch according to the attribute value in the given set. This process is the repeated at the sub-tree level. The three widely used decision tree learning algorithms are: ID3, C4.5,C5.0.

ID3 Algorithm

ID3, or Iterative Dichotomizer, was the first of three Decision Tree implementations developed by Ross Quinlan. It builds a decision tree for the given data in a top-down fashion, starting from a set of objects and a specification of properties Resources and Information. Each node of the tree, one property is tested based on maximizing information gain and minimizing entropy, and the results are used to split the object set. This process is recursively done until the set in a given sub-tree is homogeneous (i.e. it

contains objects belonging to the same category). The ID3 algorithm uses a greedy search. It selects a test using the information gain criterion, and then never explores the possibility of alternate choices.

C4.5 Algorithm

Improved version on ID 3 by Quinlan's. The new features (versus ID3) are: (i) accepts both continuous and discrete features; (ii) handles incomplete data points; (iii) solves over-fitting problem by (very clever) bottom-up technique usually known as "pruning"; and (iv) different weights can be applied the features that comprise the training data.

C5 Algorithm

This implementation is covered by patent and probably as a result, is rarely implemented (outside of commercial software packages). I have never coded a C5.0 implementation myself (I have never even seen the source code) so i can't offer an informed comparison of C5.0 versus C4.5. I have always been skeptical about the improvements claimed by its inventor (Ross Quinlan)--for instance, he claims it is "several orders of magnitude" faster than C4.5. Other claims are similarly broad ("significantly more memory efficient") and so forth. I'll just point you to studies which report the result of comparison of the two techniques and you can decide for yourself.

Table1 Comparison between ID3, C4.5, C5.0

Parameters	ID3	C4.5	C5.0
Speed	Low	Faster than ID3	Highest
Boosting	Not supported	Not supported	Supported
Missing values	Can’t deal with	Can’t deal with	Can deal with
Formula	Use information gain and information gain	Use split info and gain ratio	Same as C4.5
Types of data	Categorical	Categorical and continuous	Categorical,continuous, dates,times, timestamps
Pruning	No	Pre-pruning	Pre-pruning

Improvement in C4.5 from ID3 Algorithm

C4.5 algorithm handles both continuous and discrete attributes. For handling continuous attributes, C4.5 creates a threshold and then makes the list of attributes having value above the threshold and less than or equal to the threshold. C4.5 algorithm also handles the training data with missing attribute values. It allows attribute values to be marked as „?□. In gain and entropy calculations the missing attribute values are not used. C4.5 pruning trees after its creation. Once the tree is created this algorithm goes back to it and replace the branches that do not help in classification.

Improvement in C5 from C4.5 Algorithm

C5 is faster than C4.5. Memory usage is more efficient in C5 than C4.5. C5 gets smaller decision trees in comparison with C4.5. The C5 rule sets have lower error rates on unseen cases. So comparing with C4.5 the accuracy of result is good with C5.

C4.5 was superseded in 1997 by a commercial system See5/C5.0 (C5.0 for UNIX / Linux, See5 pour Windows). The changes encompass new capabilities as well as much improved efficiency.

A variant of boosting, which is constructs an ensemble of classifiers that are then voted to give a final classification. Boosting often leads to a dramatic improvement in predictive accuracy. New data types (e.g., dates), “not applicable” values, variable misclassification costs, and mechanisms to pre-filter attributes. Unordered rule sets—when a case is classified, all applicable rules are found and

Speed	-	C5.0 is significantly faster than C4.5 (several orders of magnitude)
Memory usage	-	C5.0 is more memory efficient than C4.5
Smaller decision trees	-	C5.0 gets similar results to C4.5 with considerably smaller decision trees.
Support for boosting	-	Boosting improves the trees and gives them more accuracy.
Weighting	-	C5.0 allows you to weight different cases and misclassification types.
Winnowing	-	a C5.0 option automatically winnows the attributes to remove those that may be unhelpful.

Several advantages of the decision tree as a classification tool have been pointed out in the literature:

1. Decision Trees are self-explanatory and when compacted they are also easy to follow. Furthermore decision trees can be converted to a set of rules. Thus this representation is considered as comprehensible.
2. Decision trees are capable to handle both nominal and numeric input attributes.
3. Decision tree representation is rich enough to represent any discrete-value classifier.
4. Decision trees are capable to handle datasets that may have errors, and missing values.
5. Decision trees are considered to be a nonparametric method; meaning decision trees have no assumptions on the space distribution and on the classifier structure.

On the other hand decision trees have disadvantages such as:

1. Most of the algorithms (like ID3 and C4.5) require that the target attribute will have only discrete values.
2. As decision trees use"divide and conquer" method, they tend to perform well if a few highly relevant attributes exist, but less so if many complex interactions are present. One of the reasons for that is that other classifiers can compactly describe a classifier that would be very challenging to represent using a decision tree.
3. The greedy characteristic of decision trees leads to another disadvantage that should be point it. This is its over-sensitivity to the training set, to irrelevant attributes and to noise.

Neural Networks

The Neural Network actually called as an artificial neural network. It is a biological model based on the Biological Neural Networks structure and functions. Data or information that passes through the network affects Artificial Neural Network structure. Because a Neural Network learns from its surrounding, and its past experiences and same wrong condition occurs in future, it will already give appropriate solution for that . Neural Network is useful in various ways. There are two tasks of Data mining using Neural Network. First one is Descriptive data mining provides knowledge or data to understand inside the data, what is happening there without any predetermine idea. Second Predictive data mining, in predictive data mining, users allows to submitting records which having field values which is unknown, and after that based on previous patterns system will able to predict the unknown values discovered form the data base.

Neural Network Method in Data Mining

Here, we focus on Neural Network method in Data Mining. For classification, clustering, prediction and pattern recognition we used the concept of Neural Network. The Neural Network model divided into the following three main types: [5]

1. *Feed-Forward Network*: It relates to the back propagation model and the function network must be representation. It is used mostly in prediction and pattern recognition.
2. *Feed-back Network*: It relates Hopfield discrete model and as representatives used in continuous model. For Associative memory and optimization calculation it is mostly used.
3. *Self-Organization Network*: It relates to adaptive resonance theory (ART) model as representatives used Kohonen model, it is mostly used in cluster analysis.

Data Mining Process based on Neural Network

A Neural Network is an artificial representation of human brain that tries to simulate its learning process [5]. An Artificial Neural Network is known as Neural Network. Neural network is one of the method used in data mining not only to extracted the useful data from huge amount of data but also to given accurate and efficient result without having any error in the resulted data . Data mining process using Neural Network can be composed by three main phases: Preparation of Data, Expression and Interpretation of the Results.

Learning Methods of Artificial Neural Network in Data Mining

A Neural Network is configured in such a way that the given application of a inputs set are produces the set of desired outputs. No of methods are used to set the strengths of the connections that is exist. The priori knowledge is used to set the weights explicitly. One Another way by feeding teaching patterns to 'train' the neural network and change its weights according to learning rule. There are various methods of learning are as follows: First one is Supervised learning or Associative learning: In supervised learning, neural network is trained by providing input and as well as matching output patterns. Second Unsupervised learning or Self-organization: In Unsupervised learning an output unit is trained with the respond of clusters of pattern which is present within the input. Here system must develop its own input stimuli of representation. For classified the pattern, no set of priori categories are used. Set of priori categories used in supervised learning. The neural network model can be broadly divided into the following three types: Feed forward Neural Network: One of the simplest feed forward neural networks (FFNN),[6] such as in Fig:4, consists of three layers: an input layer, hidden layer and output layer. In each layer there are one or more processing elements (PEs). PEs is meant to simulate the neurons in the brain and this is why they are often referred to as neurons or nodes. A PE receives inputs from either the outside world or the previous layer. There are connections between the PEs in each layer that have a weight (parameter) associated with them. This weight is adjusted during training. Information only travels in the forward direction through the network - there are no feedback loops.

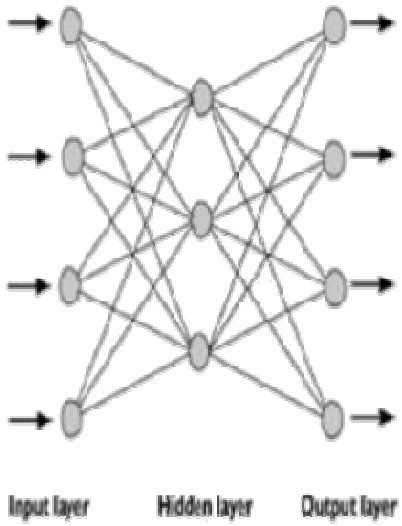

Figure 1 Neural Network with hidden layers

The Advantages of Neural Networks

1. Neural Networks is capable of producing an arbitrarily complex relationship between inputs and outputs.
2. Neural Networks should be able to analyze and organize data using its intrinsic features without any external guidance.

3. Neural Networks of various kinds can be used for clustering and prototype creation.
4. Adapt to unknown situations.
5. Powerful, it can model complex functions.
6. Ease of use, learns by example, and very little user domain-specific expertise needed.

The Disadvantages of Neural Networks

1. Neural networks do not work well when there are many hundreds or thousands of input features.
2. Neural Networks do not yield acceptable performance for complex problems.
3. It is difficult to understand the model that neural networks have built and how the raw data affects the output predictive answer.

Conclusions

The classification techniques for decision tree and neural networks have been proposed here. Merits and demerits of classification techniques for decision tree and neural networks have discussed. At present data mining is a new and important area of research and ANN itself is a very suitable for solving the problems of data mining because its characteristics of good robustness, self-organizing adaptive, parallel processing, distributed storage and high degree of fault tolerance. The commercial, educational and scientific applications are increasingly dependent on these methodologies. The classification result shows that performance of ID3,C4.5,C5 it can be concluded that C4.5 gives more number of instance classified with accuracy in Finally, C5 was well suited for classifying the performance of the required data efficiently.

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LOOK BACK ON MANET

S. Shieka Hinanas & S. Sanjeeve Kumar

Abstract

Mobile ad hoc networks (MANETs) are a subclass of wireless ad hoc networks having special characteristics of dynamic network topology and moving nodes. Mobile ad hoc networks (MANETs) are infrastructure-less self configuring networks designed to support mobility. The main of this paper is to provide a survey of MANET including its need, characteristics and its applications along with the routing protocols used for communication.

Key Words: *MANET, Characteristics,*

Applications: *DSDV, OLSR, DSR, AODV, ZRP, WRP, TORA, and SHARP*

Introduction

Mobile Ad hoc Networks (MANET) is a kind of Wireless Ad Hoc Networks [1]. MANET is the wireless ad hoc network in which each device is free to move independently in any direction. Mobile ad hoc networks are the self-configuring and infrastructure-less networks aiming to support mobility of devices. Each device changes its links to other devices frequently resulting in a highly dynamic and autonomous topology. Each device plays the role of participant as well as router of the network. Rest of the paper consists: Section 2 presents need of MANETs. Sections 3, presents applications of MANET, in Section 4, characteristics of MANET are explained and in Section 5, Routing protocols are classified and explained in brief. Finally, in section 6, we draw conclusions.

Need of Manet's

As user moves in mobile network along with his devices, he wanted to remain in contact to the network. But as user moves from one network to another its address gets changed and packets are delivered with header containing the previous address of destination. The routers don't store the exact destination address of each device but only some prefixes are stored and some optimization is applied. If the receiver can be reached within its physical subnet, it gets the packets. However some solutions exist like assigning of new IP address to the mobile device with the help of DHCP but problem is that no one knows about that address. This problem can be solved by using dynamic DNS but that also works only for nodes that do not move too quickly. Secondly, change of IP address is also not allowed by the higher layer protocols such as TCP in which each connection is identified by the socket pair (IP address, port no.), for which change of IP address during connection is like breaking off the current connection. However, Mobile IP, DHCP, Cellular networks have developed in order to support mobility but these all technologies depend on some infrastructure. Due to these problems, mobile ad hoc networks are the only choice. They do not require any infrastructure and mobile and use wireless communications.

Applications of Manet

Mobile ad-hoc networks are the only choice for mobility support where there is no infrastructure or it is too expensive. Some application areas of such use of MANET are given below: Instant infrastructure: Unplanned meetings, spontaneous interpersonal communications etc. cannot rely on any infrastructure; therefore, adhoc connectivity has to be set up.

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Disaster relief: Disasters break infrastructures and emergency teams have to rely on the infrastructure they set up themselves. Therefore, ad-hoc networks can be a solution. Military Activities: Many military activities are confidential and for security reasons it is good to use ad-hoc connectivity for communication. Remote areas: In sparsely populated and hilly areas it is too expensive to set up an infrastructure. Depending on the communication pattern, ad-hoc networks can be a solution.

Characteristics of Manet

There are some characteristics that distinguish MANETs from infrastructure networks are explained below [1, 2]:

Dynamic Network Topology:

In MANETs, nodes might move resulting in change of the topology. Therefore, snapshot of network is valid only for a very small period of time. This makes classic protocols used for wired networks unsuitable for MANETs.

Power Constraint:

Mobile nodes are mostly wireless devices running on battery power. Therefore, while designing protocols special power-saving modes and power management functions should be considered.

Bandwidth Constraints:

In MANETs, mobile nodes use wireless links which have significantly lower capacity than their hardwired counterparts till date.

Security:

No one should be able to read personal data during transmission and to track the person. Therefore, while designing a protocol for MANETs proper mechanisms for encryption and user privacy are to be considered.

Robusttransmissiontechnology:

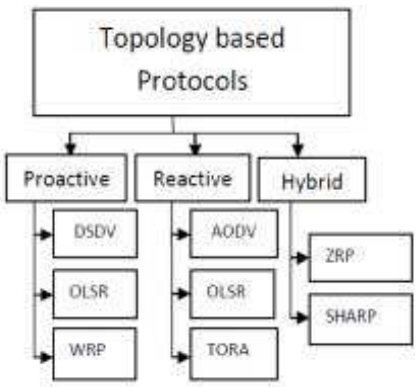
Transmission antennas are not unidirectional but Omnidirectional, so, transmission technology must reduce the effects of multiple access, fading, noise, interference conditions, etc.

Storage Constraint:

In MANET, mobile nodes have limited computing and storage capacity.

Classification of Routing

Protocols in Manet



Mobility of nodes and rapidly changing topology are such characteristics of the MANET network that make routing decisions more challenging. Several other factors such as power and storage constraints and security makes routing more challenging in VANET. Routing protocols can be classified on various basis such as on the topology of network for routing [3,4] i.e. proactive and reactive routing protocols, on the basis of communication strategy used for delivery of information from source to destination [5] i.e. unicast, multicast and broadcast. Some researchers combined basis of classification [6] and some surveyed only a specific type in detail [7, 8] and some compared the protocols on various basis [9]. In this paper, classification is done using topology information as shown below in Fig. 1.

Topology-based routing protocol uses topology information which is stored in the routing table as a basis to forward packets from source node to the destination node. They are further divided into three groups as Proactive, Reactive and Hybrid Protocols.

Proactive Routing Protocols

Proactive protocols allow a network node to use the routing table to store routes information for all other nodes, each entry in the table contains the next hop node used in the path to the destination, regardless of whether the route is currently needed or not. The table must be updated frequently to reflect the network topology changes. These protocols cause more overhead especially in the high mobility network as they share routing information with the neighbors. However, routes to destinations will always be available when needed. Proactive protocols usually choose the shortest path algorithms to determine which route will be chosen. Proactive based routing protocols may not be suitable for VANETs as they have high mobility nodes and these protocols use much of the bandwidth for sharing routing information with neighbors. Furthermore, size of the table is also quite big for large networks. DSDV and OLSR proactive routing protocols are discussed below:

Destination Sequence Distance Vector Routing (DSDV)

The destination sequenced distance vector routing protocol (DSDV) is a proactive routing protocol [10]. It is extension of classical bellman ford routing mechanism. In DSDV each node maintains a routing table that contains information about all destinations i.e. the total number of hops needed to reach these nodes, next hop to reach the destination and a sequence number initiated by the destination node. The route with the recent sequence number is considered as a fresh route. To maintain routes reliability, each node must periodically share its routing table with its neighbors. The routing table updates can be sent in two ways: a “full dump” or an “incremental” update. DSDV protocol guarantees the loop free routes; it also keeps only the optimal path to every node, rather than keeping multi paths which will help to reduce the total size of routing table.

Optimal Link State Routing (OLSR)

OLSR is a table driven protocol and an optimization of classical link state protocol [11]. In OLSR each node selects a set of Multipoint Relays (MPR) from the set of neighbors with which it has symmetrical links. Thus OLSR requires bidirectional links. Each node has the knowledge as to for which node it acts as a MPR as they periodically announce this information in their control messages. Therefore overhead minimizes as only MPR retransmit the control messages. In OLSR, MPR nodes declare link state information in the network for the nodes to which it acts as a MPR used to provide the shortest route path to all the destinations. MPR nodes are also responsible for formation of routes from source to the destination. The protocol is particularly best for large and dense network as optimization is done by using MPR nodes.

Wireless Routing Protocol (WRP)

WRP is based on the path-finding algorithm [16]. In this routing nodes communicate the distance and second-tolast hop for each destination. WRP reduces the number of cases in which a temporary routing loop can occur. Each node maintains four tables i.e. distance table, routing table, link-cost table and, message retransmission list for the purpose of routing. In WRP, only update messages are propagated to the neighbors of a node. Each MRL entry contains the sequence number of the update message, a retransmission counter, and an acknowledgement required flag and a list of updates sent in the update message. A node can decide whether to update its routing table after receiving an update message from a neighbor. A node checks the consistency of predecessor information reported by all its neighbors each time it processes an event involving a neighbor. Thus, consistency of the routing information is checked by each node which helps to eliminate routing loops and always tries to find out the best solution for routing in the network.

Reactive Routing Protocols

On demand or reactive routing protocols were designed to overcome the overhead that was created by proactive routing protocols in case of large and highly dynamic network. Reactive routing protocols

establish the route only when it is required for a node to communicate with another node. Only the routes that are currently in use are maintained which reduces the burden in the network. Only AODV and DSR routing protocols designed for reactive routing are explained below:

Ad-hoc On Demand Distance Vector Routing (AODV)

AODV routing protocol works purely on demand basis [12]. When a source node needs to communicate with another node, it starts route discovery process by broadcasting a route request message to its neighbor including the last known sequence number for that destination. Each node that forwards the route request also creates a reverse route for itself back to the source node. When the route request reaches a node with a route to destination node that node generates a route reply that contains the number of hops necessary to reach destination and the sequence number for destination most recently seen by the node generating the reply. The state created in each node along the path from source to the destination is hop-by-hop state; that is each node remembers only the next hop and not the entire route, as would be done in source routing. The main features of AODV are quick response to link breakage in active route and loop-free routes by using destination sequence numbers.

Dynamic Source Routing (DSR)

Dynamic Source Routing protocol (DSR) is designed for multi-hop wireless ad hoc networks [13]. This protocol consists of two main mechanisms “Route Discovery” and “Route Maintenance” that makes it self-configuring and self-organizing. Route discovery is used to discover the routes from source node to destination. A node caches multiple routes to any destination which support rapid reaction to routing changes as another cached route can be tried if the one it has been using should fail. It also avoids the overhead of need to perform a new Route Discovery each time a route in use breaks. In DSR, data packets store information about all the intermediate nodes in its header to reach at a particular destination. Intermediate routers don’t need to have routing information to route the data packets, but they save routing information for their future use. The intermediate node which detects broken link through route maintenance also notifies the source node using a route error packet identifying the link over which packet cannot be forwarded.

Temporally Ordered Routing Algorithm (TORA)

TORA is a highly adaptive loop free distributed routing protocol [15]. In this, a Directed Acyclic Graph (DAG) rooted at the destination using query/reply process is created to represent the route from the source node to the destination. In TORA, it is assumed that all nodes have synchronized clocks for maintaining the temporal order of topological changes. TORA uses a parameter height for each node which is a measure of the distance in hops from node to the destination node. The source node uses the height parameter to select the best route toward the destination. It is a loop-free multipath routing to destinations minimizing communication overhead.

Hybrid Routing

Need of these protocols arises with the deficiencies of proactive and reactive routing and there is demand of such protocol that combines good characteristics of both reactive and proactive routing protocols to make routing more scalable and efficient. ZRP hybrid ad hoc routing protocols is discussed in following:

Zone Routing Protocol (ZRP)

ZRP for reconfigurable wireless networks is based on the idea of routing zones [14]. Each node has a predefined zone centered at itself including other nodes whose distance is in predefined limits in terms of number of hops. Each node has to maintain up-to-date routing information only for nodes in its zone that reduces the network overhead that is caused by proactive routing protocols. Route Discovery is done to communicate with nodes not present in the zone of a node by forwarding query messages

selectively only to the nodes in its zone rather than all the nodes in a network. This causes route discovery mechanism to be much faster than that of global reactive route discovery mechanism.

Sharp Hybrid Adaptive Routing Protocol(SHARP)

SHARP automatically finds the balance point between proactive and reactive routing by adjusting the degree to which route information is propagated proactively versus the degree to which it needs to be discovered reactively [17]. This protocol defines the proactive zones around some nodes. A node-specific zone radius determines the number of nodes within a given proactive zone. All nodes within the zone radius become the member of proactive zone for that node and maintain routes proactively only to the central node All nodes that are not in the proactive zone of a given destination use reactive routing protocols to establish route to that node. In this, proactive zones are created automatically around hot destinations. The proactive zones act as collectors of packets, which forward the packets efficiently to the destination, once the packets reach any node at the zone periphery.

Conclusion

In this paper, an overview on Mobile ad hoc networks (MANETs) is presented including need of MANETs, its applications and characteristics that distinguish it from other wireless networks. Due to these characteristics, there is need of separate routing protocols for MANET. Classification of routing protocols for MANET has been done on the basis topology of the network i.e. proactive or table- driven and reactive or demand- driven. A summarized overview of routing protocols belonging to each type of classification has also been presented hoping that it will be useful and helpful to students and researchers in the field. From this, we concluded that MANET routing protocols are designed based on the application area and environment and it is not possible to design a single protocol, which is suitable for all MANETs.

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USING INFORMATION COMMUNICATION AND TECHNOLOGY (ICT) IN TEACHING TAMIL LANGUAGE

S. Kasthuri

Abstract

This study was conducted to indentify the teachers' perception of using information communication and technology (ICT) in teaching Tamil language at Tier 1. Theory of acceptances Model(TAM) was used to identify the teachers perception on their acceptance of using ICT in teaching Tamil Language at tier 1 KSSR. The study was conducted using a qualities approach. Observations and interviews were used to collect data. Six respondents among teachers were interviewed. The result showed that teacher's acceptance on using ICT is positive in terms of significance, facility and teacher's readiness in teaching Tamil at Tier I KSSR. Based on the research findings , suggestions have been proposed to increase the effective use of ICT in teaching Tamil language at Tier I KSSR among teachers.

Introduction

In the 21st century. Malaysia country faces the challenges of globalization, liberalization, internationalization and development of Information and Communication Technology (ICT). Thus the Ministry of Education (MOE) provides as educational development program that can produce citizens who are knowledgeable and ICT literacy, skills and noble, (PIPP) 2006-2010). Ministry of Education (MOE) has introduced a range of policies and measures to promote education, including launching the National Education. Blueprint (PIPP) 2006-2010). One of the core roles of PIPP is to modulate up and promotes the smart school program and the use of ICT in teaching and learning has been established PIPP (2006)> To expand the use of ICT in schools, the MOE targeting all Schools and secondary school completed infrastructure, equipment and soft ware is complete and sufficient, the instructors and staff receive adequate training to ensure that the use of ICT in force in R & D. (PIPP 2007).

According Volkmann and Eck (2001), cited from a subject, Singh and Chan (2014). The use of ICT brings a creative and supportive learning environment that is able to transform pedagogy and learning In any event it still give knowledge. ICT is not just regarded as a creature, but also as a way to hold up new ways of instruction and scholarship. The use of multimedia in education many students interested in learning because it is attractive, easy to use there is increasing diversity such as music, videos demonstrations, and even understanding them become more efficient through lighting through images and impressions directly (Plamen & Rodgers, 2003). The information revolution is happening due to the advancement of ICT posed new challenges to the teaching profession, as well as the progress that has occurred needs to be exploited to enhance the prestige of the teaching profession who are facing changes in the 21 century (Ward & Peppard, 2003).

The Government of India has introduced the computer hardware in schools across the nation. Expected In 2015, all schools across the country will enforce the learning concept of "smart school" of the teaching and learning based ICT (Ministry of Education, 2012). The challenges of education, requires the active participation of the ICT among teachers to apply technology in teaching and scholarship process. This is confirmed by research led by Isaiah (2003), the teachers are asked to master ICT skills in the instruction process. Therefore, the development of ICT has changed the development process of reading from traditional methods to more advanced Methods.

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According Melvina and Jamaludin (2010), developing countries require more teachers who have specialized in the field of information and communication technology (ICT). Teacher education, grooming also implies a paradigm shift in society to produce qualified teachers in their ability to develop and evolve the society and the state.

Teachers' Acceptance On Using ICT in Teaching Tamil Language

Teachers means on who teaches, teacher, educator or caregiver. A teacher is pleader in the scholarship process. Teachers are education who instruct the pupils in the school syllabus set by the CDC. They must be skilled in performing the duties of teaching and reading along. The job of a teacher is to instruct and prepare people so that scholars can achieve the objectives of the planned teaching and learning based on the syllabus that has been typeset. In the 21st century, the workload of teachers is more challenging. In rundown to his teaching duties, teachers are also burdened with clerical duties, facilitator, motivator, planners, curriculum advisors, leaders f clubs or association, uniformed units, sports instructors and more.

Teaching & Learning methods in Tamil Language and application of ICT is one of the latest to be practiced by educators. Instructors are encouraged to employ teaching methods and computer aided learning (CAL) in language teaching assignments. Based on the matters contained in the use of this courseware, planning and implementation of computer oriented teaching students practicable. The teaches also receive the opportunity to diversity teaching strategies in the classroom and be capable to optimize the effectiveness of pupils centered instruction.

Acceptance teacher means a teacher a instructor receive a device or person for the purpose of improving the instruction procedure. In the context of the teacher, they need to think either positively or negatively the acceptance of changes in teaching and learning in the development of ICT. In this study, teacher recruitment refers to the ability level of use of ICT by the ICT skills mastered by teachers in teaching and learning Tamil. Therefore attitude and awareness are the best means to for use and predict its commitment to the utilization processing systems. Attitude and confidence and high efficacy of teachers can help simplicity the process of increasing acceptance for use in the implementation of ICT as teaching and learning in the classroom.

Skill usage of ICT in the process of learning is skill not widely used teachers, especially teachers who teach Tamil language in primary Tamil schools. The question of to what extent ICT has been acknowledged and practiced by primary school teachers in Tamil schools remains questionable. Thus the primary implemented. Thus the primary aims of this survey are to identify the perception of acceptance the use of ICT in teaching Tamil language among teachers in primary Tamil school.

Methodology

The Cluster Tamil schools in Pahang were chosen's the study site because this school is a Tamil national type school first received recognition as cluster schools in the state of Pahang. The schools almost equipped with ICT equipment such as an air-conditioned compute laboratory equipped with computers, displays, printers, and smart boards. Amenities such as a computer lab with 20 compute and a printer supplied and financed by the Ministry of Education since 2006. The smart board is funded by the school PTA (Parents and Teachers Association). In fact, three classroom equipped with smart board (IQ Smart Board) donated by the PTA this school.

In this study, the researcher applied the theory of technology acceptance (Theory of Acceptance Model, TAM) as an instrument to identify the perception of teaches' acceptance of the use of ICT in teaching Tamil language. Model TAM formed by two basic elements, namely the use of information technology in the model introduced in 1986. Fred Davis Technology Acceptance Model (TAM) is a result of the development of the Theory of Reasoned Action (TRA), which first developed by fishbone and Ajzeen in 1975. The Technology Acceptance Model (TAM) is model to explain the causality between the belief that (the use of computer technology and ease of use) and the behavior of the objectives/needs. In the TAM model, underlying sentiment on acceptance rate of innovation refers positive or negative

feelings for an individual to change his attitude. (Ajzen & Fishebein, 2000). Thus a positive or negative act of acceptance of the use ICT in teaching and learning for teachers can be identified through the TAM model.

Findings and Discussion

The study analyzed the responses and their views based on questions posed by the researcher through interview and observation forms were made. Acceptance responding skills using ICT equipment like laptop, LCD and smart boards can be analyzed as they use they use the equipment when teaching in their respective classes. Use of the computer lab also be used to find information and teaching materials with the help of the internet. In fact, there are some teachers find and prepare materials, ICT contained in the computer lab at school free time on the encouragement of fellow teachers include computer teacher. Those who have their own laptops do not have a problem to surf the internet at the school at any time to get materials and teaching aids such as pictures, graphics, cartoons, video clips to complete the slide in Power point program or publisher to display in the classroom. On the average of all respondents can use all the facilities of existing ICT according to their respective capabilities in this school.

Perceived Ease of Use on using ICT

According to Suwarnee (2006) have also seen the willingness of teaches to use ICT. Results of research showed the attitude of teachers towards the use of ICT in teaching and learning is at the high level and positive attitude towards the use of ICT in teaching and learning. Apart from saving time in searching for information via the internet only takes a few minutes compared with manually searching in libraries, Internet use by teaches in the subject taught in the diversity of its teaching pattern, such as teaching by simulation that allows students to look and feel like a real situation.

Thus, the ease of use of ICT in teaching and learning of Tamil language as a computer lab, smart boards, desktop computers, laptops, LCD and internet networks overwhelming impact on students. This is because ICT aided learning students can diversity reference material because it can be applied to various learning activities, such as text, examine the images, video graphics and visual. In addition, students are not necessarily tied to a learning style for ICT aided learning can deal with differences in students by not only focusing on one individual to follow teaching according to their abilities (Sharifah Alwis, 1987).

In fact, indirectly help enhance understanding and increase student achievement as well as to improve the skills in the use of ICT in teaching and learning Tamil. Virtually all respondents use ICT facilities in all schools during the process of teaching and learning in the classroom Tamil language even outside the classroom. In conclusion, the average, respondents in the interview admitted that the use of ICT to make teaching and learning easier, concise because the students will be exposed to the description and presentation of interesting and easy to understand. Thus, the use of ICT in the teaching of Tamil Language by the respondents in this school evident positive impact of ICT uses reception.

The use Of ICT In Enhancing teaching Skills.

Based on the findings, the respondents can build skills in using ICT in teaching and learning Tamil language in primary school. The use of ICT equipment in classrooms, prepare teaching aids quickly and easily learn the skills of ICT use by colleagues. They often teach and share experience among collegeagues through forums, email, face book, twitter and video online. The respondents were almost able to use all ICT facilities such as computer labs, desktop computers, laptops, smart boards, internet, wifi, pendrive and LCD. In fact, the smartphone is owned by the respondent is also used to surf internet on school ground or at any of them are out of school to find materials for teaching and learning.

The results showed that the use of ICT has grown rapidly since then until now used in teaching and learning. Their application is appropriate to the needs of students because it can increase the participation and achievement when ICT is used effectively. a study conducted by Siti Zuaraids et al

(2003) explains that the use of computers can improve efficiency and encourage potential skills such as imagination, creativity and logic and critical thinking among the uses of ict in teaching and learning.

Conclusion

The study is also expected to serve as a basis for holding a guide reference book for language teachers who want to teach Tamil to aid the use of ICT in National primary Tamil schools throughout the country. The committee can figure out how to interpret the curriculum content into a form suitable for background Indian students based on current ICT developments. In fact, this can help teachers understand the use and acceptance of ICT in the teaching Tamil Language in primary Tamil schools.

Several suggestions were made between researchers suggest amenities such as network speed internet networks in schools needs to be improved to launch broadband speed so as not boring teacher speed to access and download software teaching materials in the form of text, graphics, video and animation segments. Speed internet network is very important to save time and attract teachers who are always looking for a space of time for the completion of the teaching aids for the teaching and learning process. It is suggested that the parent Teacher Association (PTA) should play an important role in providing ICT facilities or finance from external financial resources contributed. This is because most of the Tamil schools with the status capital assistance may be problematic for providing ICT facilities in schools. The financial allocation for school administration can't afford to finance the cost of maintenance of ICT. Noble efforts of the PTA can minimize the lack of ICT facilities. Even the Ministry of Education should also consider giving financial assistance allocated for the provision and maintenance of ICT facilities in Tamil schools with the status of not full aided by government.

A more in depth follow up study is expected to be carried out using other methods such as quantities research, experimental, design and development and so on to see the acceptance of the use of ICT in teaching and learning the Tamil Language to be more effective and in keeping with changing times.

ICT IN EDUCATION POLICY ISSUES

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Introduction

Information and communication technology policy has now been revised to a "One Digital Identity per Child" and 'Smart Classrooms" in all primary and secondary schools. While a device for every child remains the end goal, MINEDUC is shifting from One Laptop Per Child (OLPC) to the concept of a "Smart Classroom" following changing technology, to reduce costs and increase access and equity. More importantly, the policy will ensure that technology is integrated in all education processes i.e. preparation, delivery of lessons, assessments and research.

"To harness the innovative and cost-effective potential of world-class educational technology tools and resources, for knowledge creation and deepening, to push out the boundaries of education: improve quality, increase access, enhance diversity of learning methods and materials, include new categories of learners, foster both communication and collaboration skills, and build capacity of all those involved in providing education."

ICT is an enabling tool and a cost effective solution to improve and increase access to education. ICT must therefore be incorporated in a systemic process, within the context of challenges to be met, strategic issues to be addressed and key result areas to promote with tangible indicators of success.

ICT in Formal Education

Improve preparation of the current generation of students for a workplace where ICT tools such as computers, Internet and other related technologies, are becoming ever more present. This will include technological literacy and the ability to use ICTs effectively and efficiently to provide a competitive edge in an increasingly globalized job market. The focus in formal education is:

- Ensuring primary, secondary, TVET and Higher Education educators use ICTs in their teaching and learning practices.
- Promoting the use of Open Distance and e-Learning (ODeL).
- Promoting the use of Open Education Resources.
- Promoting the teaching of ICT as subject matter.
- Raising awareness among students, teachers, and parents of the value of ICTs.
- Making ICTs available to all formal education levels, and enable students, at all educational levels, to use ICTs in their learning as a tool and as a methodology.
- Enabling all teachers and administrators to use ICTs as a management tool to support the educational process.
- Using ICTs to support the emergence of teaching and pedagogical student-centred approaches and encouraging research and collaborative learning.
- Facilitating access to a wider range of knowledge for students and teachers to support the teaching and learning process.
- Using ICTs as a tool to improve quality of education in all subjects at all levels and supporting the effort of the Education Quality Assurance Department in improving the quality of education.
- Ensuring the availability of infrastructure that is critical to successfully integrate ICTs at all levels of education.

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- Establishment of the Rwanda Education and Research Network (RwEdNet) to ensure that scientists and researchers in higher learning institutions in Rwanda are connected to the regional and international body of research.

ICT in Non-Formal Education

ICT provides opportunities for self-learning and distance-learning independently of time or place. Enable citizens to have learning and development opportunities throughout their lives, anywhere—irrespective of age, gender or geographic location—thus supporting the country's aspiration to build a knowledge-based economy. The focus in non-formal education is:

- Promoting the use of community learning and information centres and libraries, and open and distance learning centres to support literacy and learning opportunities to all Rwandans. Expand activities to include the use of video, radio and TV.
- Promoting the use of ODeL.
- Creating and leveraging partnerships with private and community-based organizations to provide learning opportunities and improve ICT literacy for all Rwandans.
- Leveraging ICT infrastructure in schools to encourage and support afterschool programmes to target students, out-of-school leavers, and local communities to develop life and ICT skills, and provide other lifelong learning opportunities.

Access and Equity

This policy recognizes ICTs to be a cross-cutting area aimed at equality and equity to all Rwandan citizens. The focus is on:

- Using ICTs to provide educational opportunities to all Rwandan citizens regardless of gender, age, geographical location, or special educational need.
- Providing a basic ICT model to all schools and community centres regardless of gender, age, geographical location, or special educational need.
- Providing access to ICT in learning centres for people in very remote, rural, and economically disadvantaged areas.
- Promoting a "Bring Your Own Device" (BYOD) programme for teachers and students in order to increase ICT penetration at all levels.

Infrastructure

Efforts will be made, to provide the needed infrastructure to the remote and underserved areas using technological solutions that are suited to local needs and conditions. The focus is on:

- Providing all formal and non-formal education institutions with the essential infrastructure to facilitate the adoption of ICTs within the education system.
- Developing infrastructure in close collaboration and coordination with relevant ICT stakeholders and partners, to optimize synergy and cost-effectiveness.
- Explore alternative energy solutions where necessary.
- Ensuring that well-trained and capable human resources are available to maintain ICT in Education infrastructure.
- Defining a replicable, scalable, reliable and sustainable technology model to be introduced in schools.
- Developing and adopting assistive technologies for people living with disabilities.

Curriculum design, delivery and assessment

For successfully integrating ICTs in education, curriculum revisions must be continually conducted, along with training on ICTs and ICT-enabled teaching and learning taught as 12 both a subject and pedagogy using learner-centered and interactive methods. The focus is on:

- Providing curriculum at all levels of education.
- Promoting a blended learning approach and establishing appropriate mechanisms and guidelines for regulating the development and use of electronic content.
- Exploring options for obtaining copyrights of existing electronic material in the medium term.
- Creating and developing Rwanda-specific national electronic content, in all subjects, on the long term to be used as supplementary material, aligning it with the national curriculum, and revising the curriculum accordingly.
- Enabling teachers to use open educational resources, Massive Open Online Courses, create electronic content, and share knowledge experiences and practices using technology.
- Creating a centralized digital library/repository (Rwanda Educational Portal) of digital learning material to be accessed by all schools.
- Developing content and training manuals for pre-service teachers on using ICT in teaching and learning.
- Ensuring that learners and educators are empowered to encounter internet-related risks to privacy and content quality.
- Using ICTs as a tool to design tests and testing tools incorporating ICT based student assessment tools.
- Mandating and empowering the Curriculum developers to be the focal point of coordination for the development of electronic content

Training and Capacity Building

ICT-enabled training methods will be fully explored, including distance education, e-learning, and blended learning. Pre-service and in-service training will be offered on a continuous basis to enable staff and other stakeholders to keep up to date with technological and pedagogical developments. The focus is on:

- Providing pre-service training of teachers on the effective utilization of technology (software and hardware) in their teaching and learning.
- Ensuring that teachers are able to:
- access a wider range of high quality tools and resources to create innovative, challenging and engaging learning opportunities;
- plan, schedule and deliver more personalized and effective teaching and learning;
- communicate and collaborate more extensively and effectively with their students and parents;
- efficiently access and exploit a greater range of student performance data to analyze progress and act on it;
- Improve practice through greater professional collaboration in their own school, across the Rwanda and internationally.
- Providing effective ICT literacy training programmes for all teachers at all levels that promotes change and ensures quality.
- Supporting head teachers to establish their schools ICT vision, leveraging available technological infrastructure to better manage the school and foster modern teaching.
- Training curricula developers on creating and developing digital learning material.
- Developing general standards, guidelines, and certification requirements for trainers and training centres.
- Developing a cadre of technical expertise to manage and maintain ICT facilities at all levels and to optimize uptime.
- Ensuring that students are able to:
- access and exploit world-class educational tools and resources to improve the quality of engagement and learning outcomes;

- explore and develop their knowledge, skills and understanding through a more personalized learning experience;
- communicate and collaborate more extensively and effectively with their peers, teachers and community;
- experience a greater range of formative assessment to support their educational progress;
- Monitor, reflect on and manage their own learning.

Management, Support, and Sustainability

Necessary actions will be taken to plan and budget for ICT in Education projects, including innovative means to secure and optimizing requirements through public private partnerships. Additionally, income generating activities will be explored and conducted in order to minimize the Government expenditure on ICT in education initiatives. The policy will focus on:

- Making necessary budgetary provisions associated with the capital and operational costs of ICT facilities.
- Developing an income generating strategy in line with ICT in education programmes.
- Promoting Public-Private-Partnership through "Adopt-and-Sponsor a School" programme for ICT penetration in schools and higher education in terms of infrastructure, content development and delivery, and capacity building.
- Adopting a strategy for technical support and maintenance with adequate staff and budgets to service the needs of the centralized and decentralized levels of education.
- Providing in-service professional development opportunities for teachers to enable the use and creation of digital content and pedagogic integration.
- Providing professional development opportunities for school inspectors on the integration of ICTs in the teaching and learning process.
- Training educational administrators on ICT projects, including planning, managing, budgeting, resource management, and Monitoring & Evaluation.

Open Distance and e-Learning

The main purpose of ODeL is to increase the provision of educational opportunities, at all levels of education and training to improve access to, quality and effectiveness of the education system, and improve the efficiency of the educational sub-sector. The ICT in Education focus is on:

- Setting up an effective ICT support to ODeL
- Building capacity and competency in ODeL delivery including development of content, training of instructors and delivery of content.
- Enable blended face-to-face and e-learning approaches as required for developing appropriate, effective and efficient means of meeting both national educational objectives and the needs of students.

Multi-Stakeholder Partnerships

Recognizing the value of multi-stakeholder partnerships, and valuing the opportunity that lies from the possible support from global corporations and development partners, the Government of Rwanda will engage in various modes of collaboration and partnerships. The focus is on:

- Engaging local, regional and global partners in efforts to integrate ICTs in education and to avail research and innovations to improve the education system.
- Creating an enabling environment conducive to global and local partners' investments and support to the education system including:
- Peer to peer research and collaboration.
- Twinning between public and private educational institutions to transfer and exchange best practices and share available resources.

- Support the integration of ICTs in education.
- Financing of ICTs in education.
- Encouraging the private sector companies to adopt schools to bring about school improvement.

Research and Development

Recognising experiences and lessons learned from educators and learners, the Government of Rwanda will facilitate participatory involvement of stakeholders at all levels and develop means of disseminating and analysing the feedback to improve learning outcomes. The focus is on:

- Conducting a needs assessment and establishing a mechanism for continually identifying best practices and gaps and researching innovative solutions to improve the education system.
- Creating a venue to facilitate a participatory approach enabling grass-root research and quality improvements, especially through showcases, seminars, workshops and conferences.
- Enhancing higher education institutions research and development capabilities.
- Supporting publication of publicly funded research under open access licence.

Monitoring and Evaluation

Monitoring and evaluation will be used to research and develop ICT integration, to learn from past experiences, to improve implementation and service delivery, to assess and allocate resources, and to assess results. The focus is on:

- Working in close collaboration with key stakeholders to establish criteria, indicators and enchmarks for assessment of implementation and impact of ICT in education.
- Creating processes and systems that promote information sharing, equity, transparency, and accountability for all stakeholders in the implementation of this policy.
- Using ICTs to support the efforts of different stakeholders in monitoring the performance of education process and institutions.
- Integrating EMIS in all stakeholders' activities for monitoring and evaluation.
- Conducting regular reviews and assessments of the value added and impact of the multi-stakeholder partnerships on the education system at all levels.

Conclusion

Increase access to basic education for all, for both formal and non-formal education, using ICT as one of the major tools for learning, teaching, searching and information sharing. Improve the quality of basic education and promote independent and lifelong learning, especially from primary to tertiary education. Contribute to the development of a workforce equipped with the ICT skills needed for employment and use in a knowledge-based economy. Ensure that Rwanda has in place an ICT-driven process that supports evidence-based decision making with respect to resource allocation, strategic planning, and monitoring and evaluation of the educational policy implementation.

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EFFECTIVE USE OF ICT IN SCHOOL EDUCATION

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Introduction

Information and Communication Technologies are defined as all devices, tools, content, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realising the goals of teaching learning, enhancing access to and reach of resources, building of capacities, as well as management of the educational system.

These will not only include hardware devices connected to computers, and software applications, but also interactive digital content, internet and other satellite communication devices, radio and television services, web based content repositories, interactive forums, learning management systems, and management information systems. These will also include processes for digitisation, deployment and management of content, development and deployment of platforms and processes for capacity development, and creation of forums for interaction and exchange.

Information and Communication Technology in School Education

Challenges and Issues

Challenges before the Education System in India Concerns of reach and access to education continue to attract widespread attention of all segments of society. Following sustained, Initiatives spread over many decades, the country can today boast of perhaps one of the largest ever schooling systems. With increased throughput, and ever increasing numbers of students aspiring for higher education, concerns of equity in education and issues of quality have also begun to attract attention.

The challenge of developing alternate modes of education, continuing education, teacher capacity building, and information systems for efficient management of the school system are being addressed. With Information and Communication technologies becoming more accessible, reliable and mature, the prospect of leveraging ICT for education is becoming increasingly feasible.

Information and Communication Technologies in Schools Information and Communication Technologies have enabled the convergence of a wide array of technology based and technology mediated resources for teaching learning. It has therefore become possible to employ ICT as an omnibus support system for education. The potential of ICT to respond to the various challenges the Indian education system poses are:

1. ICT can be beneficially leveraged to disseminate information about and catalyze adaptation, adoption, translation and distribution of sparse educational resources distributed across various media and forms. This will help promote its widespread availability and extensive use.
2. There is an urgent need to digitize and make available educational audio and video resources, which exist in different languages, media standards and formats.
3. Given the scarcity of print resources as well as web content in Indian languages, ICT can be very gainfully employed for digitizing and disseminating existing print resources like books, documents, handouts, charts and posters, which have been used extensively in the school system, in order to enhance its reach and use.
4. ICT can address teacher capacity building, ongoing teacher support and strengthen the school system's ability to manage and improve efficiencies, which have been difficult to address so far due to the size of the school system and the limited reach of conventional methods of training and support.

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5. Using computers and the Internet as mere information delivery devices grossly underutilizes its power and capabilities. There is an urgent need to develop and deploy a large variety of applications, software tools, media and interactive devices in order to promote creative, aesthetic, analytical and problem solving abilities and sensitivities in students and teachers.

ICT Literacy and Competency Enhancement

The policy defines ICT Literacy in terms of levels of competence. Based on the stage of schooling at which a student or teacher is introduced to ICT, they may progress to different levels. These levels are suggestive and adaptations must be made to suit local conditions. The levels do not correspond to specific classes (for eg, sixth or seventh standard) and time duration must also be locally determined. Also, these levels must be revised periodically to keep pace with changing technology.

Stage 1: Basic

Basics of computers and basic use of tools and techniques – operate a computer, store, retrieve and manage data, use a computer to achieve basic word and data processing tasks; connect, disconnect and troubleshoot basic storage, input and output devices Connect to the internet, use e-mail and web surfing, use search engines, keep the computer updated and secure, operate and manage content from external devices (sound recorders, digital cameras, scanners etc.); connect, disconnect, operate and troubleshoot digital devices;

Stage 2: Intermediate

Create and manage content using a variety of software applications and digital devices; using web sites and search engines to locate, retrieve and manage content, tools and resources; install, uninstall and troubleshoot simple software applications etc.

Stage 3: Advanced

Use different software applications to enhance one's own learning – database applications, analysis of data and problem solving, computing, design, graphical and audio-visual communication; undertake research and carry out projects using web resources; use ICT for documentation and presentation; create and participate in web based networks for cooperative and collaborative learning; become aware of issues of cyber security, copyright and safe use of ICT and take necessary steps to protect oneself and ICT resources.

Note: The above stages constitute a general set of competencies for all students and teachers. ICT as an elective subject at the plus two stages will have its own distinct curriculum and competency set.

As each stage is defined by competencies to be achieved, the pace is dependent on frequency of access to the ICT facilities. Based on the local situation, the time duration needed for each stage will be shortened. Different parts of each stage can also run concurrently. In any case, an attempt will be made to ensure every student completes the advanced stage before completing schooling. The competencies will also guide ICT curricula for teachers.

A programme of ICT literacy will be implemented across all secondary schools in the States, both government and private within the XII plan period. A model Curriculum for ICT in Education (CICT) will be developed at National Level and States will be encouraged to adopt/adapt it.

States will develop an ICT literacy curriculum and appropriate course materials mapped to the stages mentioned above for uniformity. These will be in the form of self-instructional materials, enabling students and teachers to process them on their own. The ICT literacy programme will endeavour to provide a broad set of generic skills and conceptual knowledge and not focus on mastering the use of specific software applications.

The Boards of Secondary Education will develop a suitable scheme of Evaluation. ICT would be an additional subject together with the award of a certificate of proficiency.

The ICT Literacy programme will be extended to the upper primary stage by the end of the XII plan period. However States may take up this expansion earlier, based on resource availability and capacity of the system. Dedicated teacher with appropriate qualification will be engaged in each school.

This teacher will also function as the ICT coordinator of the school where ICT literacy is to be imparted. With the growth of infrastructure in the school, a suitably qualified technical assistant may also be provided. All teachers in a school will be expected to become advanced users of ICT integrating ICT skills into their professional development as well as their teaching learning practices across all areas of the curriculum.

ICT enabled teaching – learning processes

- ICT enabled teaching-learning encompasses a variety of techniques, tools, content and resources aimed at improving the quality and efficiency of the teaching learning process. Ranging from projecting media to support a lesson, to multimedia self-learning modules, to simulations to virtual learning environments, there are a variety of options available to the teacher to utilise various ICT tools for effective pedagogy. Each such device or strategy also involves changes in the classroom environment, and its bearing on effectiveness. Availability of a wide range of such teaching-learning materials will catalyse transformation of classrooms into ICT Enabled classrooms.
- Teachers will participate in selection and critical evaluation of digital content and resources. They will also be encouraged to develop their own digital resources, sharing them with colleagues through the digital repositories. 4.3.3 In schools equipped with EDUSAT terminals, DTH or other media devices, relevant activities will be planned and incorporated into the time schedule of the school.
- Initially the teachers may use the Computer lab for teaching-learning but progressively more classrooms will be equipped with appropriate ICTs, making way for ICT Enabled classes

Elective Courses at the Higher Secondary level

- States will initiate the process of launching/creating courses in different areas of ICT for the higher secondary stage. The courses will factor in the requirements of students of different streams, including academic and vocational streams.
- Courses will be modular in design to enable students to select appropriate software applications based on current needs of higher education and job prospects. Courses will be revised frequently to keep pace with emerging trends in ICT.
- A Post Graduate teacher with appropriate qualifications to teach these courses will be appointed.
- An ICT Lab attendant/technical assistant with appropriate qualifications will be appointed to manage the ICT/Multimedia Resource lab.

ICT for Skill Development

(Vocational and job oriented areas of general education)

- Job oriented courses in ICT will be developed and established for students of the vocational stream at the higher secondary level by linking them with the need of ICT enabled industries/establishment in the neighbourhood.. The scope of these courses would be a broad based ICT literacy. It will not be limited to ICT based occupations, but will inform and enhance productivities in a wide range of other occupations (for example, accounting, office automation, office communication, data handling and data processing, desktop publishing, graphics and designing, music and video, etc). This will also include courses on cyber security.
- The courses will be modular and students will be provided a wide range of choices, catering to a variety of job options, hardware and software platforms, tools and resources. Appropriate mechanisms to counsel students in selecting career paths and courses will be developed simultaneously. The courses will be in conformity with the National Vocational Education Qualifications Framework (NVEQF).

- The courses will be frequently revised and updated in order to maintain relevancy to changing requirements of the job market and emerging trends in technology. Hence it will also be imperative to conduct such courses in close liaison with industry.
- The institutions offering Vocational courses will be required to integrate ICTs in their teaching-learning process.
- An open learning system will be developed permitting students to continue to reskill themselves. Conventional restrictions of age and previous qualifications will be suitably reworked to facilitate an open system. Where feasible, online and distance modes will also be explored. Lateral and vertical mobility will be established amongst the courses with multiple entry and exit options.
- A system of On-demand evaluation and certification, to enable students to obtain timely qualifications will be developed.

ICT for Children with Special Needs

- Use of ICT will catalyse the cause and achieve the goals of inclusive education in schools.
- ICT software and tools to facilitate access to persons with disabilities, like screen readers, Braille printers, etc. will be part of the ICT infrastructure in all schools. Special care will be taken to ensure appropriate ICT access to students and teachers with special needs.
- All teachers will be sensitised to issues related to students with special needs and the potential of ICT to address them. All capacity building programmes will include components of ICT enabled inclusive education.
- All web based interfaces developed for the programme including digital repositories, management information systems, etc. will conform to international guidelines for accessibility.
- Accessibility norms will be adopted as per the World Wide Web consortium, W3C guidelines (Web Content Accessibility guidelines, http://www.w3.org) to enable the content to be accessed by children with special needs. Web based digital repositories with W3C compliance will address the lack of availability of resources for persons with disabilities. Digital content and resources, for the exclusive use of persons with disabilities, talking books for example, will also be developed and deployed.
- The absence of appropriate vocabulary for different subject areas in the different Indian languages and the unfamiliarity of the cultural context can make digital communication and resources inaccessible to students and teachers across the country. Efforts will be initiated to develop appropriate word lists and dictionaries in Indian languages and wide spread translations encouraged.

ICT for Open and Distance Learning

- Open and Distance Learning with the use of ICT opens out alternate possibilities for students who have dropped out, cannot continue formal education or are students of the non-formal system of education. Existing formal systems of Education will be strengthened with ICT based instruction available in Open and Distance Learning Systems so as to cater to the needs of such learners.
- Present Open Schooling systems (e.g. National or State level Open Schools) will be strengthened by harnessing ICTs innovatively. Access to e-books, digital learning resources, Digital Repositories (with relevant learning resources) etc. will be developed by these institutions as student support services. This will also be used for online capacity building for open and distance teacher training.
- All Open and Distance Learning Systems will be automated and provide online, all services including admissions, examinations, e-Accreditation and grievance redressed on the lines of the National Institute of Open Schooling.
- The proposed mentoring system for students involving expert teachers will be extended to these students also. Online courses, online on demand exams, and digital repositories and content, media broadcasts planned through DTH/Satellite based, open learning systems allowing multiple entry and exit points, opening out the school resources to non-formal students, guidance and counseling, will result in effective use of ICT for open and distance learning.

Conclusion

In addition, the major promises of ICTs use in education systems of Ethiopian University focus on training teachers in new skills and introducing innovative pedagogies into the classrooms, investing on ICT infrastructure for universities and creating networks among universities, improving overall standard of education by reducing the gap in quality of education between universities, initiation of smart university with objectives to foster self-paced, self-assessed, and self-directed learning through the applications of ICTs, and developing ICT policy for education and training. On the other hand, this study discusses the major challenges of ICT use in education as instructor related, student related, and technology related. In addition, the key challenges of ICTs integration into education systems discussed relate to policy, planning, infrastructure, learning content and language, capacity building and financing.

What will be the way forward then? There is a consensus that the development of any country depends upon the quality of education programs offered to citizens. ICTs, despite their known limitations, are believed to be beneficial in this regard. The computer and the internet are especially useful to enhance student engagement in learning and positively impact student performance and achievement.

ICT integration can have a positive impact in teaching and learning process, which takes place in the teaching and learning situation. It is not the ICT itself, but the approach in which it is used that makes a worthy or a worthless resource. The instructors continues to be the mediator in the teaching and learning situation, thus it is imperative for instructors to be prepared in order to make ICT resources to be functional in the university.

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