CLASSROOM TEACHING-LEARNING WITH ICT EQUIPMENT: CHALLENGES FROM TEACHERS' PERCEPTIONS

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ABSTRACT

Information and Communication Technology (ICT) has brought about a striking change in the traditional views and methods associated with teaching and learning. It has revolutionized the education system by creating an interactive, engaging and cooperative teaching-learning environment. In spite of having potent reasons behind integrating ICT equipment in the classroom situation, the classrooms of provincialized schools of Assam are still deprived of ICT facilities. The author of the article is intended to reveal the attitude of the teachers in relation to the stream of subject(s) they taught towards the application of ICT equipment as Teaching-Learning Material (TLM) in the classroom teaching-learning situation. The study also focuses on the problems of integrating ICT as TLM in the classroom situation of secondary level school education. Self- structured questionnaires have been administered to 260 high school teachers of Kamrup District (Assam) to collect data. The study depicts that there exists no significant difference between Science and Arts stream teachers' attitude towards using ICT equipment as TLM in classroom situation. The findings of the study also reveal that lack of proper training on the part of the teachers, non-availability of the ICT equipment in the schools, maintenance problem, lack of adequate infrastructure, lack of skills on the part of the teachers to operate the ICT equipment, rigid attitude of the teachers to deviate from the traditional teaching-learning method etc. are the major challenges identified by the teachers.

Keywords: *classroom, teaching-learning, teacher, ICT, challenges.*

1. Introduction

Information and Communication Technology (ICT) is basically an umbrella term which covers all communication technologies such as internet, wireless networks, cell-phones, and satellite communications, digital television, computer, hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs etc. that provide access to information. So far as the origin of the term Information and Communication Technology (ICT) is concerned, the credit must go to USA. In USA the term "Information Science" (later known as Information and Communication Technology) was first introduced in 1950 for the effective handling of the interchange of scientific information among the scientists in USA and foreign countries. Later on, in around 1960, use of ICT was extended to the field of industry and today ICT is a buzz word and has become part and parcel of our lifestyle including education and instruction.

In India the Ministry of Education and Social Welfare realized the importance of technology for qualitative improvement of education and included the Education Technology Project in its Fifth Five Year Plan in 1971. Accordingly, Educational Technology Unit was started in the Ministry of Education and Social Welfare in 1971. A CET (Center for Education Technology) in NCERT was set up during 1973. Education Technology Cells come into being in different states from 1972-73 onwards. In spite of early implementation of technology in education system, India has been facing stern problems in the field of integration of ICT in education.

1.1 Significance of the study

The potentials of ICT have revolutionized the whole teaching learning process. With the support of ICT, the students are able to get exposed to a large amount of information. ICT helps in the process of role transition of the students. Students change their position from a mere knowledge seeker to those who can think critically, creatively and reflectively. The classrooms of advanced countries are already well equipped with ICT facilities. But till this date, ICT facilities are not properly accessible in the provincialized schools of our state (Assam) and the country as a whole. However there is an urgent need to bring positive changes in this scenario. Hence the concerned

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teachers' attitude towards ICT use in classroom and adequate understanding of the obstacles that have been facing by the provincialized high school teachers of Kamrup District of Assam will help to reveal the pitiable scenario. This scenario will certainly help the authority and policy makers to do the needful in this field. From this point of view the present study bears utmost significance.

1.2 Statement of the problem

The investigator has stated the problem as, **"Classroom teaching-learning with ICT equipment: Challenges from teachers' perceptions".**

1.3 Objectives of the study

Objective 1: To study the attitude of the teachers towards the use of ICT equipment as TLM in classroom situation in relation to the stream of their subjects (Science / Arts).
Objective 2: To identify the perceived barriers in the field of integrating ICT equipment as TLM in classroom situation of secondary level school education.

1.4 Hypothesis of the study

Ho1: There exists no significant difference between the Science and Arts stream teachers' attitude towards the use of ICT equipment as TLM in classroom situation.

2. Review of related literature

Every new research endeavor needs to have a microscopic observation of the works that have been made over the centuries. It makes the investigator up to date in his information. The present investigator has also made an exertion to scan through the related literature from various resources as under.

Kundu (2019) carried out a study on, "Barriers to Utilizing ICT in Education in India with a Special Focus on Rural Areas." The study disclosed that dearth of trained teachers, shortage of resource access, insufficient training opportunities, lack of self-reliance among the teachers, paucity of time, inadequate knowledge about integration of ICT in lessons, technical issues, paucity of software, lack of funds, shortage of trained technical personnel, deficiency of ICT service centre are the obstacles that hinder integration of ICT in education. The author of the study had remarked that the ICT projects in rural schools are not self-sustainable.

Singhavi and Basargekar (2019) conducted a study to find out the barriers affecting the use of ICT from school teachers' perspectives. The findings of study revealed that unsatisfactory internet bandwidth as speed, inadequate no. of internet connected computers, lack of flexibility due to time constriction and overload of work, inadequate no. of Interactive White Board or any other educational software etc. are the barriers for English Medium schools. The regional medium schools are also found to suffer from similar obstacles as English medium schools along with the problem like lack of contents in national (Hindi) language.

Alharbi (2014) conducted a study on "A Study on the Use of ICT in Teaching in Secondary Schools in Kuwait". The researcher had stated the research questions as- (i) How confident are teachers in using ICT in the teaching and learning process? (ii) Are there any differences between students' learning in public schools and private schools in terms of their use of ICT in the classroom? Responses made by the teachers reveal a state of general confidence in ICT use, especially for the most basic and intuitive PC tasks. The overall mean for all the tasks was 3.71, which means that teachers are close to 'confident'. On the other hand private school students are more confident than the public school.

Habibu, Mamun, Clement (2012) conducted a study on "Difficulties faced by teachers in using ICT in teaching-learning at Technical and Higher Educational Institutions of Uganda". The result of the study disclosed that teachers have strong desire to integrate ICT into teaching-learning process, though they have been facing problems in this field. Lack of genuine software, inadequate computer in the classroom, low speed internet, unavailability of latest ICT equipment, lack of expert technical staff, poor administrative support etc. are the major barriers of integrating ICT in the teaching-learning process.

Sundararaj (2005) conducted a study to assess the attitude of the B.Ed. trainees of Tamil Nadu Open University towards Computer Education. The findings of the study revealed that, (i)

there exists significant difference between male and female B.Ed. trainees' attitude towards computer education. Female B.Ed. trainees have positive attitude towards computer education. (ii) There exists significant difference between rural and urban B.Ed. trainees' attitude towards computer education. (iii) There exists significant difference between Science and Arts B.Ed. trainees' attitude towards computer education.

3. Research methodology

Research methodology implies the technique that has been adopted by the investigator for conducting the study and the logic behind using such a technique.

3.1 Method of the study

The present investigator has adopted the descriptive survey method (school survey) for conducting the study.

3.2 Study Area

Kamrup District of Assam (India) has been selected as the study area.

3.3 Sample of the study

Simple or unrestricted random sampling technique (lottery method) has been adopted and accordingly 22 High Schools of Kamrup District have been selected by the investigator. Again for selecting the teacher sample, the investigator has adopted stratified random sampling technique. Accordingly a total number of 260 teachers (160 Arts and 100 Science) of provincialized High Schools of Kamrup District constitute the sample of the study.

3.4 Tools used

Self-structured questionnaires have been prepared by the investigator as tool and content validity has also been checked for standardization of the tool. Again, reliability co-efficient (using test-retest method) of the attitude scale has been found as 0.88 (high reliability).

3.5 Scoring pattern

The attitude scale for teachers has been prepared by the investigator with 3 ratings such as strongly agree, agree and disagree.
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Accordingly scoring pattern has been fixed as 2 for strongly agree, 1 for agree and 0 for disagree.

3.6 Statistical techniques used

'Z' test has been used to find out the significant difference between Science and Arts stream teachers Mean score. As the objective 2 is concerned with status finding, therefore descriptive statistical analyses in terms of percentages have been shown.

3.7 Administration of tool and data collection

The present study is based on both primary and secondary sources of data. The secondary data have been collected from different journals, books, Ph.D. theses, M.Phil. dissertations, magazines etc. The primary data have been collected from the High School teachers of the selected schools with the help of the questionnaire. The investigator has visited the selected schools, introduced self and tried to establish a good rapport with the head of the institution and also with the teachers of the respective schools. The investigator has explained the purpose and significance of the study. The teachers are also requested to offer response to the items of the questionnaire with honesty and sincerity.

4. Data analyses and result

Objective wise data analysis and result have been shown as under-

4.1 Analysis of objective 1

'Z' tests have been calculated by the present investigator to find out the significant difference between the mean scores of Science and Arts stream teachers' attitude towards the use of ICT equipment as TLM in classroom situation.

Objective 1: To study the attitude of the teachers towards the use of ICT equipment as TLM in classroom situation in relation to the stream of their subjects (Science /Arts).

Ho1: There exists no significant difference between the Science and Arts stream teachers' attitude towards the use of ICT equipment as TLM in classroom situation.

Table: 4.1: 'Z' value of Science and Arts stream teachers' attitude towards using ICT equipment as TLM in classroom situation.

Stream of Subject	N	Mean	S.D	S_ED	C.R or Z value	Status
Arts	160	31.39	10.2	1.71	0.61	Ho is accepted
Science	100	32.44	11.7			

The table 4.2 depicts that the calculated Z value is 0.61 which is much smaller than the critical Z value i.e. 2.58 at 1% level of confidence. Therefore it is statistically significant at 0.01% level of confidence. Therefore the Ho1 stating- "There exists no significant difference between the Science and Arts stream teachers' attitude towards the use of ICT equipment as TLM in classroom situation", is accepted. From the above analysis it can be interpreted that both Science and Arts stream teachers have the same attitude towards the use of ICT equipment as TLM in classroom situation.

4.2 Analysis of objective 2

Analysis of objective 2 has been shown with the help of the following table and graphical representation.

Objective 2: To identify the perceived barriers in the field of integrating ICT equipment as TLM in classroom situation of secondary level school education.

Table 4.2: Problems identified by the teachers in the field of application of ICT equipment as TLM in classroom situation

Sl. No.	PROBLEM AREAS	STATEMENTS	RESPONSES			
			YES	NO	% of yes responses	Average %
1	Non -Availability	(1) Computer/Laptop are not available	112	148	43.07	88.61%
		(2) Internet facility is not available	260	0	100	
		(3) LCD projectors are not available	260	0	100	
		(4) Interactive White Boards are not available	260	0	100	
		(5)Power point presentation facility is not available	260	0	100	
2	Lack of Skill	(1) Lack of skills to search for internet/web page.	194	66	74.62	70.97%
		(2)Lack of skills to operate the ICT equipment	175	85	67.31	
3	Shortage of Time	(1) Regular class hour is not sufficient for using ICT related TLM.	42	218	16.15	23.07 %
		(2) Excessive work load in school	70	190	26.92	

Sl. No.	PROBLEM AREAS	STATEMENTS	RESPONSES			
			YES	NO	% of yes responses	Average %
		(3) Preparation of ICT related TLM is a time consuming task.	68	192	26.15	
4	Rigid Attitude	(1) Unenthusiastic to deviate from the traditional lecture dominated class	52	208	20	52.56.%
		(2) Lack of interest in using ICT related TLM in classroom situation	98	162	37.69	
		(3) Use of ICT equipment in classroom is not a priority	260	0	100	
5	Lack of Proper Training	(1) Lack of adequate training /orientation program for acquiring computer literacy.	248	12	95.38	97.69 %
		(2) Lack of adequate training/orientation program on application of ICT equipment in classroom.	260	0	100	
6	Lack of Infrastructure	(1) Classrooms are not well equipped for using ICT related TLM	260	0	100	77.30%
		(2) Lack of adequate power supply	108	152	41.53	
		(3) Lack of adequate digital classroom facility	235	25	90.38	
7	Financial Problem	(1) Lack of fund for purchasing ICT equipment.	76	184	29.23	49.61%
		(2) Inadequate fund for maintenance of computers and other ICT equipment.	182	78	70	
8	Maintenance problem	(1) Lack of technician/skilled person for proper maintenance of the ICT equipment.	248	12	95.38	86.54%
		(2) Lack of proper storage facility	225	35	70	

The above table (Table: 4.2) shows that 97.69% teachers have indentified 'lack of proper training' as a problem area. Non-availability of the ICT equipment is also a problem area which has been identified by 88.61% teachers. 'Maintenance problem' is also a problem area and it has been identified by 86.54% teachers. It is seen that 77.30% teachers have identified 'lack of infrastructure' and 70.97% teachers have identified 'Lack of skill' as problem. 52.56% teachers have identified 'rigid attitude' as problem areas and 'financial problem' has been identified by 49.61% teachers. 'Shortage of time" is also a problem area which has been identified by 23.07% teachers. The same table data can also be represented graphically as below:

Fig. 4.1: Graphical representation showing the problem-area wise average percentage of 'yes' responses given by the teachers.

Problem Area wise Average Percentage of 'Yes' Responses
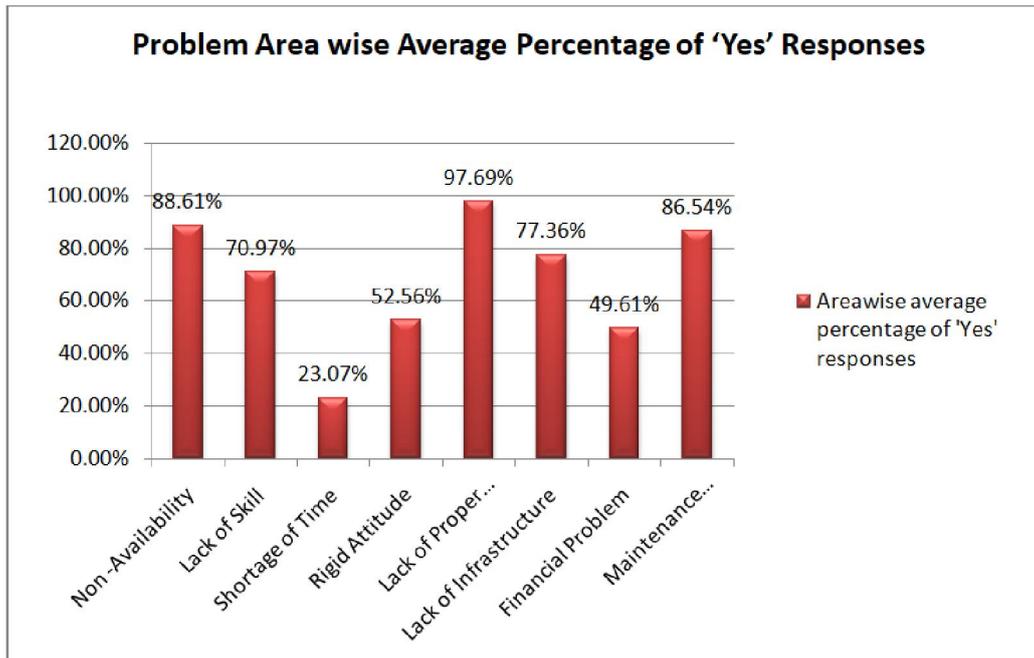
5. Discussion

The present study has revealed that the lack of proper training, non-availability and maintenance problem are the severe barriers in case of successful ICT integration in classroom situation. Lack of infrastructure, rigid attitude and lack of skill are also major problems in this field. The intensity of the financial problem can be regarded as moderate. Shortage of time is a negligible problem area. Similar study has been conducted by **Kundu** (2019) with an intention to expose the barriers in the field of ICT use in education in the rural areas of India. The study has disclosed that lack of trained teachers, inadequate training opportunities, lack of confidence among the teachers, scarcity of time, insufficient knowledge about integration of ICT in lessons, technical issues, poor administrative support, paucity of software, lack of funds, shortage of trained technical personnel etc. are some problem areas. Study has also been conducted in the same line by **Singhavi and Basargekar** (2019) to find out the barriers perceived by teachers of Maharastra (India) in the field of utilization of ICT in the classrooms. The study exposed the barriers like- lack of flexibility due to time constraint and overload of work, insufficient no. of internet connected computers, lack of

contents in national (Hindi) language etc. To focus on the challenges in the field of smooth implementation of ICTs in rural education field in Indian context **Budhedeo** (2016) carried out a study. In this study that author had remarked that ICT integration is not achievable in India more particularly in case of rural schools due to the problems like- lack of trained teachers, shortage of time, issues of maintenance and upgrading the equipment, scarcity of funds, challenges of language and content, shortage of equipment, lack of technical support etc..

6. Recommendations and suggestions

Effective application of ICT equipment as TLM in the classrooms of secondary level schools of Kamrup District is still a dream since it suffers from a lot of obstacles that have been exposed by the present study. The following steps will certainly be supportive to overcome the situation.

1. To implement drastic change in any field change in the attitude of the concerned persons is positively needed. The traditional chalk and talk strategy of the teachers need to be blended with ICT integrated strategy or virtual classroom. Adequate infrastructural facilities required for using ICT equipment should be ensured first along with sufficient ICT equipment to meet the individual need of the

students. Special fund meant for ICT cell should be raised in the school and Government should also provide grant in aid for the bulkiness of the fund.

2. To develop ICT expertise of the teachers ICT training program should be organized twice in a year during vacations for the in-service teachers. Again in case of teacher recruitment ICT competence should be an essential criterion. Role of the teacher training institutions is also noteworthy here since adequate importance should be laid on developing ICT proficiency of the prospective teachers.

3. Computers/Laptops in the schools does not mean ICT infrastructure. Uninterrupted power supply to each and every classroom of the school should be ensured. Consumption of solar energy in this regard may be a great idea, particularly in case of the schools which are still deprived from electrical connectivity and /or suffer from inconsistent power supply.

Computer without Internet connection is incomplete. Therefore continuous internet connectivity should be assured by the authority. Apart from these, there should be provision of sophisticated ICT equipment like Projector; Interactive White Board etc., so that the classrooms of our nation can uphold the same rank as the classrooms of the advanced countries.

7. Conclusion

Use of ICT has a bright vision for guiding the path of education of the growing children. It has utmost importance for the development of the nation as country's development is closely connected with the system of education. Again there exists a strong link between a nation's level of development and the level of technology used for such development. Therefore the teachers, educational authorities, and policy makers should become conscious and try to reorganize the whole teaching – learning process enriched with ICT facilities.

References

1. Alharbi, Eid. (2014). "A Study on the Use of ICT in Teaching in Secondary Schools in Kuwait".Ph.D. thesis, Cardiff School of Education, Cardiff Metropolitan university.
2. Bhattacharjee and Dev(2016). "Role of ICT in 21st. Century's Teacher Education." (International Journal of Education and Information Studies, 6, (1) 1-6. http://www.ripublication.com
3. Budhedeo, D.S. (2016). Issues and Challenges in Bringing ICT Enabled Education to Rural India. International Journal of Scientific Research and Education, 4 (01), 4759-4766.
4. Chand, Tara (2004): Educational Technology, New Delhi. Anmol Publications Private Ltd.
5. Dahiya, Surender S (2005). Educational Technology: Towards Better Teacher Performance. Delhi: SHIPRA PUBLICATIONS.
6. Dash, ManojKumar(2010). ICT in Teacher Development. Hyderabad: Neel Kamal Publications Pvt. Ltd.
7. Doley (2016). "ICT in Higher Education: Its Challenges and Prospects." Sikshajyoti, III.
8. Habibu, Mamun, Clement (2012). "Difficulties faced by teachers in using ICT in teaching-learning at Technical and Higher Educational Institutions of Uganda". International Journal of Engineering Research and Technology, 1,(7)
9. Kateri Tekakwitha Kennedy (2015) "Requisite Skills and Knowledge Principals Perceive Necessary to Successfully Integrate Technology at the Middle School Level." Dissertation, Sage Graduate School, New York.
10. Kundu, A. (2019). Barriers to utilizing ict in education in india with a special focus on rural areas. International Journal of Scientific, Research and Reviews , 7 (2), 341-359.
11. Mangal, S.K. and Mangal, Uma (2013): Essentials of Educational Technology, Delhi. PHI Learning Private Limited.
12. Manligod, Hector John T. (2012), "Integration of Information and

Communication Technology in Public Secondary Schools in Metro-Manila, Philippines." Ph.D. thesis, Universidade de Santiago de Compostela.

13. Mihir C, Trivedi. (2015), "A Study of ICT Awareness, Use and Need of Secondary and Higher Secondary School Teachers of Saurashtra Region." Ph.D. thesis, Saurashtra University.shodhganga.inflibnet.ac.in

14. Omariba,Alice. Gitau, Dr. Edwin Ndichu and Ayot, Henry Okello. (2016, November.) "Challenges Facing Teachers and Students in the Use of Instrumental Technologies: A case of Selected Secondary Schools in Kisii Central District, Kisii County." International Journal of Information Research and Review,3, (II) 3129-3137.

15. Raj, M. (2013), "A Study of the Effectiveness of Electronic Classroom for Teaching Science at Secondary Level in terms of Selected Student and Teacher Variables." Ph.D. thesis, Kurukshetra University, Kurukshetra (Haryana).

16. Sarma, R.A. Educational Research (2013).

17. Singhavi and Basargekar (2019, June). "Barriers Perceived by Teachers for Use of Information and Communication Technology (ICT) in the Classroom in Maharastra, India." The International Journal of Education and Development Using Information and Communication Technology. 15 (2), 62-78.

18. Wang, P.Y. (2013). Examining the Digital Divide between Rural and Urban Schools: Technology Availability, Teachers' Integration Level and Students' Perception. Journal of Curriculum and Teaching, 2 (2), 127-139.

19. Young, R. (2008). Using Technology Tools in Public School Classroom. Ph.D. Thesis.