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Issues and Challenges Faced by the Teachers During Integration of ICT in Teaching-Learning Process of Darrang District in Assam

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Abstract

In this modern era, it is very important for the students to get opportunities to learn and apply 21st century skills. From many researches, it is found that integration of ICT into scholarly activities improves teaching and learning methods. It encourages and motivates students to participate and enhance learning. The use of ICT in classroom is very important as the world is moving towards the digital era. Therefore the main purpose of the study is to analyze the issues and challenges faced by the teachers in integrating ICT in the classroom. For this study, a quantitative research design with a questionnaire was used to collect the data randomly from 207 schools of Darrang district. But only 100 responses were received. From the data collected, the key challenges were found as limited knowledge of ICT among teachers, limited accessibility, network and electricity, limited technical and pedagogical support, lack of teachers' training and competency. From the outcome of the study, it is expected that this research provides proper information and recommendation to those responsible for the ICT integration into the school education.

Keywords: ICT integration in Education, Issues and Challenges, Standard Deviation

1. Introduction

The District Darrang is situated at the center of the state, which comes under North Bank Plain Zone (NBPZ) of Assam, occupies a geographical area of 1850.58 sq. km between longitudes 20°09'N to 26°95'N and latitudes 91°45'E to 92°22'E.The district is surrounded in the north by Udalguri District, in the east Sonitpur District and in the west by Kamrup District. The mighty Brahmaputra flows along the southern periphery of the district. The river Brahmaputra is the main river in the border of the south of the district flows from the east to west direction (https://darrang.gov.in/geography.htm).

There are three educational blocks in the Darrang district namely Sipajhar, Kalaigaon and Dalgaon-Sialmari. There are 207 ICT equipped schools in the three blocks where Smart boards, tele-education, computers & laptops with internet connections are provided.

It is the most important thing for education system to find out the outcome of this technology support in teaching-learning process as well as the problems related to integration of this new method of instruction.

In the present days, Information and Communication Technology (ICT) has become an important part of most organizations (Zhang & Aikman, 2007). Most of the researchers agree that integration of ICT helps

learners and teachers work together and improve the 21st century teaching-learning process. Some researchers also mentioned that the use of ICT in teaching-learning process is one of the main features of advanced education system (Homiakova, Arras, and Kozik, 2017). UNESCO emphasized that ICT could help the teaching-learning in many ways such as to improve the quality of teachers and teaching methods; to trained the teachers in the field of integrated teaching, to impart active participation and child –centric teaching etc (UNESCO 2019). As it is well known that the literacy is one of the important indicators of economic development of a country. And the development of a country solely depends on its education system. So in a developing country like India Information and Communication Technology plays a vital role in developing rural education system as well as it ensures the awareness about the importance of education among the rural population. ICTs have the potential to motivate and engage the learners, to innovate as well as strengthening teaching and helping school change etc (Lemke and Coughlin 1998, Davis and Tearle 1999). If the teachers are kept updated with the modern technologies, then they can offer many methods of enhancing classroom teaching and learning (Ghavifekr et al., 2014; Lefebvre, Deaudelin & Loiselle, 2006).

But there are lots of problems that arise when the teachers have to implement changes in their methods of teaching. Due to the importance of ICT in the future education, identifying the primary and basic challenges to integrate the technology in school education system would be the most important step. The teachers always encounter obstacles during the process of integrating technologies into their teaching and learning (Balanskat, Blamire, and Kefala, 2006). In India, it is also observed that benefits of ICT have not reached the expected level. We must say that the nation is yet to develop an explicit policy for the ICT integration in education.

2. Rationale of the study:

ICT has become an important part of everyday life and almost all the sectors including education now depend on ICT for their transaction. NEP 2020 has highlighted the importance of ICT in school education.

In view of the increasing use of ICT, it will probably continue to change many of the approaches applied by both the teachers and learners in teaching-learning process. ICT plays an important role in education. Some are discussed here.

ICT can improve the classroom transaction by using technological devices which enhances learners' motivation. Use of Computer Assisted Learning, Power Point presentation, LCD projector, Smart board, Emails, YouTube, Wikipedia etc are very effective in classroom instruction and it helps to improve the quality of learning in education.

Teaching through ICT supports the teachers to stimulate the learners' interest in very productive way because it improves the capacity of self-learning. With the help of ICT, the teacher can easily make the students' engagement attentive and can assess their achievement.

The students can gather knowledge through Internet and they are able to discuss as well as share their knowledge with peers, teachers and experts.

There are many other benefits of ICT, such as

- It helps the learners to connect nature with education.
- Audio-visual helps the learners to gain proper knowledge in a very short time.
- It makes education more accessible bringing the education to the doorstep of every children living in remote areas also.

- It provides access to a vast area of educational resources and content.
- It provides a great network of experts to the learners.
- Use of ICT makes the teaching more innovative, interesting, interactive and effective.

The Government of India has emphasized on the ICT enabled school education which aims the all round socioeconomic development of the nation. The role of ICT in education is stated as "major tool for building knowledge in societies" (UNESCO, 2003).

4. Statement of the problem:

Integration of ICT in teaching-learning helps to improve the process with active involvement of both the teachers and learners. The study basically aims to find out the issues and challenges faced by the teachers during integration of ICT in teaching-learning process of Darrang district, Assam.

5. Objectives:

There are very few government schools with ICT infrastructure in the district. Majority of schools do not provide the ICT education at all. According to NEP 2020, the scheme of ICT must be provided to all the rural areas. In view of that, it is very important to know the status of the schools in the aspirational districts like Darrang and to identify the issues and challenges of the teachers in integrating the schemes and policies related to ICT education. Therefore this study aims to find out the real pictures of education system of all the schools under the three educational blocks of Darrang district such as Sipajhar, Kalaigaon and Dalgaon. Thus we may state the main objectives of the study as follows:

- To identify the teachers' awareness in implementing ICT tools in teaching and learning in classroom.
- To identify the challenges faced by the teachers of using ICT in teaching-learning process.
- To identify the limit of teachers in using ICT tools in classroom transaction.
- To introduce the teachers with the components and facilities which could be used to improve ICT integration in classroom?
- To find out the efficiency of teachers handling ICT.

It is worth mentioning here that in this paper, the ICT tools refers to the common technology-based tools like LCD projector, Computer, Laptop, Camera, Digital audio-visual devices etc.

6. Review of literature:

The 21st century educators must obtain the sufficient knowledge and information for the advanced classroom as because of the integration of ICT in teaching-learning process. As the ICT has become a part of everyday life, the New Education Policy emphasis on the digital literacy. It also highlighted the importance of ICT in school education. The Ministry of Education is encouraging the schools to equip themselves with appropriate levels of technology according to their means and capacities. The schools are also encouraged to initiate themselves to provide assistance from various stakeholders, community members and parents. Unfortunately, in India, it is still observed that ICT is largely associated with the use of computers and Internet. Also the teachers are lack of proper knowledge and training in incorporating the ICT in education. It is still not addressed clearly in school education system how and when to use ICT in education. ICTs are so powerful tool that it can provide many educational opportunities for both formal and non-formal, groups traditionally excluded from education due to some socio-cultural reasons, women, gifted children etc.ICT acts as a catalyst in achieving the goals of inclusive education in school.

Although it is well known that ICT has the potential to improve the education system of a country, it is much more challenging for the developing countries. It is a very complex process and the difficulties faced by the teachers and competent authority in implementing the process is known as the challenges (Schoepp, 2005). In this study, we tried to find out the main challenges regarding teachers' use of ICT in classroom transaction. Following are some key challenges we reviewed in details:

- Studies have shown that most of the teachers of school education are not properly trained and they don't even know how to operate a computer and how to use ICT in education. Thus the lack of trained teachers highly impacts the quality of ICT integrated education in classroom. Some recent research have showed that lack of in-service training in digital literacy & lack of pedagogic training in how to use ICT in the classroom to teach specific subject areas were the obstacles in integrating ICT.
- Various research studies indicate that the lack of network connection to access the resources is one of the complex challenges for teachers to integrate technology into education. Insufficient fund is also a major problem in introducing ICT in school education. Apart from computer desktop, other hardware tools such as printers, modems, papers, extra disk drives, UPS etc are very costly.
- From some of the previous studies it is observed that the lack of the electricity and technical support are two main significant barriers in using ICT in the schools. If the supply of electricity is not well-built, it is very difficult to maintain the ICT tools such as hardware and accessories functioning well. These barriers lead to technical barriers like waiting for websites to open, failing to connect to the internet, printers not printing, malfunctioning of computers etc.
- Due to slow network connectivity, most of the schools are unable to connect to the www. In the rural areas, the network connectivity is still poor which affects the use of ICT. Several studies also indicates that the school teachers are engaged in various activities in addition to their normal duties and even if they have competence and confidence enough in using computers in classroom transaction, they still make little use of technologies due to the lack of time.

7. Research Questions:

- What are the key challenges you are facing to incorporate ICT in teaching-learning process?
- According to you what is teachers' perception in ICT integration?
- To what extent do the teachers use ICT tools in teaching-learning process?

8. Research Methodology:

8.1 The research design:

In this study, the quantitative methodology is used to collect the data from the respondents and analyze the data.

A questionnaire was self-developed and finalized by the researcher and distributed among the target group of respondents. The questionnaire was designed in such a way that it addresses the research objectives and teachers' perception towards the use of ICT in schools of Darrang district.

8.2 The population of the study :

The target population of the study consisted of teachers from 207 ICT equipped schools of Darrang district. In our study, the purposive sampling system was used. The purposive sampling technique is a technique when a researcher chooses specific people in the population for the research study. From the 207 schools, all the respondents were chooses in such a way that they could give direct responses to the research questions.

8.3 Area of the study:

The area of the study covers the obstacles in the use of ICT like lack of knowledge and skill, lack of resource access, inadequate training, lack of confidence among the teachers, poor technical and administrative support, poor fit with the curriculum, limit of time and fund, technical issues and insufficient knowledge about integration of ICT in classroom transaction of UP/HS/HSS etc.

8.4 Sample of the study:

In Darrang district there are three educational blocks such as Sipajhar, Kalaigaon and Dalgaon. In this study, we have covered the total 207 schools from all the blocks which have ICT infrastructure. A total of 207 teachers in the district of Darrang were randomly selected from the 207 schools as the sample for the study. The sample responded to the research questions directly and the data was collected to better understand the challenges of the teachers. The researcher needed to indicate the age range and the teaching experience of the teachers as it has an impact on the teachers' use of technology in various subjects during classroom transaction.

8.5 Tools/materials used for the study:

A self-developed questionnaire was distributed among the respondent. The questionnaire was designed in such a way that it covers five-point scale ranging from: 5 – always, 4 – often, 3 – sometimes, 2 – rarely, 1 – never. The questionnaires were distributed by hand to the respondents. It was included questions like (A) Personal details, (B) Teaching experience, (C) Experience in ICT, (D) Training for the use of ICT, (E) Challenges of using ICT tools in classroom, (F) Technical support for teachers in ICT use, (G) ICT related to curriculum, (H) Teachers ICT skills, (I) Teachers opinion on the impact of ICT based classroom in achieving the students' learning outcome. The respondents were given one week to fill the questionnaire and return it to the researcher. Some were submitted with missing information. Finally the researcher got only 100 questionnaires that were returned back for data analysis.

8.6 Statistical techniques used:

The researcher gathered all the data and analyzed using the statistical packages for the Social Sciences (SPSS) version 22. The analysis of the study includes descriptive analysis to analyze the frequency and percentage of the overall population. The technique is also used to determine the mean as well as standard deviation.

9. Findings

The following table 1 shows the demographic finding on the sample where in the age category under 25 has the frequency 2 and percentage 2%, age 26-35 has the frequency 35 and percentage 35%, age 36-45 has frequency 55 and percentage 55%, age 46-55 has the frequency 5 and percentage 5% and the age 55+ has frequency 3 and percentage 3%.

The gender findings also shows that male frequency is 35 and percentage is 35% and female frequency is 65 and percentage is 65%. Table shows the experience based on the years of experience by the sample less than 1 year has frequency 2 and percentage is 2%, 1-10 years frequency is 40 and percentage is 40%, 10-20 years frequency is 55 and percentage is 55% and 20 years+ has frequency 3 and percentage 3%.

The subjects taught by the respondents are: Language (frequency is 30 and percentage is 30%), Mathematics (f = 38 or 38%), Science subjects (f = 29 or 29%) and other (f = 3 or percentage 3%). According to the data obtained, age group 36-45 years has the highest no of participants and the majority is female and has 10-20 years of experience.

Table 1: Demographic finding on sample

Factors	Category	Frequency	Percentage
Age	Under 25	2	2%
	26-35	35	35%
	36-45	55	55%
	46-55	5	5%
	55+	3	3%
Gender	Male	35	35%
	Female	65	65%
Experience	Less than 1 year	2	2%
	1-10 years	40	40%
	10-20 years	55	55%
	20 years +	3	3%
Subject taught	Language	30	30%
	Mathematics	38	38%
	Science	29	29%
	Others	3	3%

10. Analysis

Based on the research questions provided to the respondents and their responses, we have analyzed the result as follows:

The first research question was

- What are the key challenges you are facing to incorporate ICT in teaching-learning process?

Table 2 shows the descriptive statistics about the key challenges faced by the teachers in integrating ICT to their classroom transaction.

Table 2: Challenges in integrating ICT to classroom transaction

Items	Al-ways	Of-ten	Some-times	Rare-ly	Nev-er	Mean	SD
Insufficient No of Comput-ers/Laptops/Notepads	36 (36%)	30 (30%)	29 (29%)	5 (5%)	0 (0%)	2.03	0.926
Insufficient Power sup-ply/Electricity	30 (30%)	32 (32%)	21 (21%)	9 (9%)	8 (8%)	2.33	1.223
Poor Network Connectivity	35 (35%)	33 (33%)	26 (26%)	6 (6%)	0 (0%)	2.03	0.926

Lack of teacher Training	67 (67%)	15 (15%)	16 (16%)	2 (2%)	0 (0%)	2.05	0.770
Insufficient Technical Support	44 (44%)	30 (30%)	25 (25%)	1 (1%)	0 (0%)	1.97	0.771
Insufficient Pedagogical Support	43 (43%)	32 (32%)	14 (14%)	10 (10%)	1 (1%)	3.95	0.978
Lack of Adequate Material/Content	47 (47%)	25 (25%)	26 (26%)	2 (2%)	0 (0%)	2.05	0.770
Lack of Knowledge on How to Use ICT in Teaching Specific Subject	31 (31%)	29 (29%)	15 (15%)	15 (15%)	10 (10%)	3.54	1.321
Lack of Time	27 (27%)	23 (23%)	23 (23%)	16 (16%)	11 (11%)	3.28	1.341
Lack of Interest of Teachers	31 (31%)	29 (29%)	15 (15%)	15 (15%)	10 (10%)	3.54	1.321
Too Difficult to Integrate ICT into Curriculum	50 (50%)	24 (24%)	23 (23%)	2 (2%)	1 (1%)	2.06	0.802
Overall Mean						**2.62**	**1.014**

According to the table 2, entire disclosure showed a moderate level. For the statement “Insufficient no of Computers/laptops/notepads” (M = 2.03, SD = 0.926), 36% respondent always, 30% often, 29% sometimes, 5% rarely and 0% never. For “Insufficient power supply/electricity” (M = 2.33, SD = 1.223), 30% respondent always, 32% often, 21% sometimes, 9% rarely and 8% never. “Poor network connectivity” (M = 2.03, SD = 0.926), 35% respondent always, 33% often, 26% sometimes, 6% rarely and 0% never. For another statement “Lack of teacher training”, (M = 2.05, SD = 0.770), 67% respondent always, 15% often, 16% sometimes, 2% rarely and 0% never. “Insufficient technical support” (M = 1.97, SD = 0.771), 44% respondent always, 30% often, 25% sometimes, 1% rarely and 0% never. For the statement “Insufficient pedagogical support”, (M = 3.95, SD = 0.978), 43% respondent always, 32% often, 14% sometimes, 10% rarely and 1% never. For another statement “Lack of adequate material/content” (M = 2.05, SD = 0.770), 47% respondent always, 25% often, 26% sometimes, 2% rarely and 0% never. “Lack of knowledge on how to use ICT in teaching specific subject” (M = 3.54, SD = 1.321), 31% respondent always, 29% often, 15% sometimes, 15% rarely and 10% never. The statement “Lack of time” (M = 3.28, SD = 1.341), 27% respondent always, 23% often, 23% sometimes, 16% rarely and 11% never. For statement “Lack of interest of teachers” (M = 3.54, SD

= 1.321), 31% respondent always, 29% often, 15% sometimes, 15% rarely and 10% never. And lastly, for the statement "Too difficult to integrate ICT into classroom" (M = 2.06, SD = 0.802), 50% respondent always, 24% often, 23% sometimes, 2% rarely and 1% never.

From the above table it is found that the overall mean constraints is M = 2.62 and SD = 1.014 which is at a high level.

The second research question was

- According to you what is teachers' perception in ICT integration?

The following table 3 shows the descriptive statistics about the teachers' perception in ICT integration in teaching-learning process.

For the statement "Learners understand more easily while they learn" (M = 2.32, SD = 0.973), 48% respondent always, 26% often, 16% sometimes, 10% rarely and 0% never. For "Learners remember more easily what they have learnt" (M = 1.97, SD = 0.810), 50% respondent always, 28% often, 20% sometimes, 2% rarely and 0% never. "ICT improves the classroom environment" (M = 2.05, SD = 0.989), 45% respondent always, 30% often, 20% sometimes, 5% rarely and 0% never. For another statement "Learners concentrate more on learning", (M = 2.02, SD = 0.943), 38% respondent always, 30% often, 27% sometimes, 5% rarely and 0% never. "Learns more elaborately and easily difficult topics" (M = 1.96, SD = 0.931), 45% respondent always, 29% often, 21% sometimes, 5% rarely and 0% never. For the statement "ICT helps in collaborative works between learners", (M = 2.02, SD = 0.943), 40% respondent always, 30% often, 25% sometimes, 5% rarely and 0% never. While overall mean constraints is M = 2.06, SD = 0.932 which is at a moderate level.

Table 3: Teachers' perception in ICT integration

Items	Always	Often	Sometimes	Rarely	Never	Mean	SD
Learners Understand More Easily While They Learn	48 (48%)	26 (26%)	16 (16%)	10 (10%)	0 (0%)	2.32	0.973
Learners Remember More Easily What They Have Learnt	50 (50%)	28 (28%)	20 (20%)	2 (2%)	0 (0%)	1.97	0.810
ICT Improves the Class Environment (Learners' Engagement and Less Disturbance)	45 (45%)	30 (30%)	20 (20%)	5 (5%)	0 (0%)	2.05	0.989
Learners Concentrate More on Learning	38 (38%)	30 (30%)	27 (27%)	5 (5%)	0 (0%)	2.02	0.943
Learns More Elaborately and Easily Difficult Topics	45 (45%)	29 (29%)	21 (21%)	5 (5%)	0 (0%)	1.96	0.931

ICT Helps in Collaborative Works Between Learners	40 (40%)	30 (30%)	25 (25%)	5 (5%)	0 (0%)	2.02	0.943
Overall Mean						2.06	0.932

The third research question was

- To what extent do the teachers use ICT tools in teaching-learning process?

Table 4 shows the descriptive statistics about the use of ICT in Teaching-Learning process.

Table 4: Use of ICT in Teaching-Learning

Items	Always	Often	Sometimes	Rarely	Never	Mean	SD
Shows Videos, Pictures Online Related to Syllabus	40 (40%)	30 (30%)	24 (24%)	6 (6%)	0 (0%)	2.05	0.989
Creates Interesting Power-Point Presentation with Animation Related to Subject Topic	39 (39%)	30 (30%)	23 (23%)	8 (8%)	0 (0%)	2.05	0.989
Edit Questionnaire Online	41 (41%)	32 (32%)	22 (22%)	5 (5%)	0 (0%)	1.97	0.810
Teach Learners How to Behave Through Videos	40 (40%)	30 (30%)	28 (28%)	2 (2%)	0 (0%)	2.02	0.816
Participate in Social Network	32 (32%)	41 (41%)	25 (25%)	2 (2%)	0 (0%)	1.97	0.810
Organize Computer Files and Folders for School Administration and Classroom Management	15 (15%)	45 (45%)	35 (35%)	5 (5%)	0 (0%)	2.32	0.777
Create Text Resource Using Word Processor	20 (20%)	30 (30%)	35 (35%)	15 (15%)	0 (0%)	2.32	0.777
Create a School Data-	25 (25%)	25 (25%)	40 (40%)	10 (10%)	0 (0%)	2.32	0.973

base							
Use Emails to Communicate with Others	33 (33%)	40 (40%)	22 (22%)	5 (5%)	0 (0%)	1.97	0.810
Create Attendance Spreadsheet	20 (20%)	37 (37%)	37 (37%)	5 (5%)	1 (1%)	2.30	0.882
Documentation of School Activities	26 (26%)	38 (38%)	26 (26%)	10 (10%)	0 (0%)	2.32	0.973
Overall Mean						2.15	0.873

For the statement "Shows videos, pictures online related to syllabus" (M = 2.05, SD = 0.989), 40% respondent always, 30% often, 24% sometimes, 6% rarely and 0% never. For "Create interesting PowerPoint presentation with animation related to subject topic" (M = 2.05, SD = 0.989), 39% respondent always, 30% often, 23% sometimes, 8% rarely and 0% never. "Edit questionnaire online" (M = 1.97, SD = 0.810), 41% respondent always, 32% often, 22% sometimes, 5% rarely and 0% never. For another statement "Teach learners how to behave through videos", (M = 2.02, SD = 0.816), 40% respondent always, 30% often, 28% sometimes, 2% rarely and 0% never. "Participate in social network" (M = 1.97, SD = 0.810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. For the statement "Organize computer files and folders for school administration and classroom management", (M = 2.32, SD = 0.777), 15% respondent always, 45% often, 35% sometimes, 5% rarely and 0% never. For another statement "Create text resource using word processor" (M = 2.32, SD = 0.777), 20% respondent always, 30% often, 35% sometimes, 15% rarely and 0% never. "Create a school database" (M = 2.32, SD = 0.973), 25% respondent always, 25% often, 40% sometimes, 10% rarely and 0% never. The statement "Use emails to communicate with others" (M = 1.97, SD = 0.810), 33% respondent always, 40% often, 22% sometimes, 5% rarely and 0% never. For statement "Create attendance spreadsheet" (M = 2.30, SD = 0.882), 20% respondent always, 37% often, 37% sometimes, 5% rarely and 1% never. Lastly for the statement "Documentation of school activities" (M = 2.32, SD = 0.973), 26% respondent always, 38% often, 26% sometimes, 10% rarely and 0% never. While overall mean constraints is M = 2.15 and SD = 0.873.

15. Conclusion:

The study identifies the challenges related to implementation and integration of ICT among the school teachers in teaching-learning process. Also it recognizes the effectiveness of the use of ICT in school education and identifies the teachers' perception towards the ICT integration.

From the analysis of this study, it is indicated that there are high level of challenges of using ICT in school education, whereas average level of teachers' perception towards the use of ICT as well as average use of ICT in teaching-learning process.

The discoveries from the respondents' statistics revealed that lack of teachers' training, lack of adequate material/content and internet facility, insufficient pedagogical and technical support, lack of proper instruction and guidance, insufficient computers and power supply are the major challenges of integration of ICT. It was also revealed that most of the teachers use their own data to access to the

internet to browse. It was also pointed out that, although all the schools covered here are ICT equipped, they were provided limited facility and installation. The teachers were unable to operate the ICT equipments like, computers, smart board or projectors. They were not instructed properly when and how to use the smart boards and projectors. The most important part revealed through this study was that in most of the schools the projectors were found in sealed boxes. These were not even opened and still in the almirah. This is a strong point to be noted that when schools are supplied with the needed ICT equipments and services, the teachers must trained on their uses and the ICT integration in all their courses. For the 21st century teachers to be prepared to enter into the classroom, they must be provided with new ways and technology to process knowledge.

This study will provide priceless information to the school education department regarding the actual picture of ICT integration in teaching-learning process among the schools. Teachers must be trained enough and prepared to utilize technology in their teaching methods. Effective implementation of ICT will lead the empowerment of teachers.

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