Impact Of In-Service Training On Teachers’ Attitude Towards Use Of Ict In Teaching Learning

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Abstract: Information Communication Technology (ICT) can bring a meaning full qualitative difference in the manner & methods the lessons are transacted in the classroom. Majority of the studies established that degree of integration of ICT by teachers is positively correlated with their attitude to use of ICT resources. Despite the availability of ICT resources the teachers are inadequately integrate ICT in teaching learning. A purposive investigation was executed on 65 teachers who teach 9th & 10th grade students of the state aided schools of West Bengal, India. The study was conducted to find out the differences of attitude of practicing teachers towards integration of ICT in class room, before and after the short term training, provided under CSSTE scheme. A standardized Likert instrument was used to collect relevant data. By means of paired t-test it is revealed that respondent teachers have positive attitude towards use of ICT as pedagogical tool in teaching learning but it was evident that the short-term training fails to make any impact on their attitude towards utilizing the ICT resources in classroom teaching learning. Though the result is statistically insignificant, but results revealed that the training have positive impact on teachers. In-terms of utilizing ICT resources, belong to Under Graduate, Rural and Arts Stream, while the training showed negative impact on their counterpart. The impact was positive for the respondent teachers irrespective of their gender. Though the impact of training is not consistence in all the relevant dimensions of teachers’ attitude the study has thrown a light to the fact that use of ICT in teaching learning should be given higher level of weight-age priority than current degree of emphasis it is enjoying. Thus it is indicates the necessity of more intensive Teachers’ Training with the focus of ICT pedagogy.

Index Terms: Attitudes towards ICT, Practicing Teacher, ICT Resources, Teachers’ Training, ICT pedagogy

1. INTRODUCTION

Information and Communication Technologies (ICT) includes software applications, mobile devices and various gadgets and communication systems viz. blogs, social media etc. are now necessary pedagogical tools in teaching-learning [1]. Integration of ICT in secondary schooling Almadhour (2010) prescribed internet, digital devices like camera, video player with having the capacity to take images or video clipping are pedagogical tools [2]. Most of the studies revealed that the lessons are presented through ICT can make an enormous difference than the traditional teaching [3]. NCF (2005) in India have single out constructivism as approach of teaching learning in the class room [4]. Constructivism has now at the epicenter of theoretical position in school education and has become a strong prime mover in ICT education [5]. In spite of availability of resources and support systems, most of the teachers are still struggling to use ICT as a pedagogic tool in their classroom [6]. However, pedagogical use of ICT in teaching learning is a complex phenomenon that needs time and multimodal support from the institutions [7].

Attitudes of teachers about computers, impact teachers’ understanding of the utility of technology, and also influence teacher’s ability to integrate them into the classroom [8]. Teachers’ engagement with technology for teaching learning is directly correlated with teacher’s attitude and temperament. of attitudes of teachers involved [9],[10]. Therefore, teacher education, both pre-service and in-service, needs to address the issue of capacity building of teachers; for use ICT in class room. The institutions failed to adapt usable technology in teaching learning as teachers’ denied adequate training which in turn develop a kinds of attitude antagonistic to use ICT in class room [11]. Moreover, adapting ICT for professional development for teachers’ is also not a regular practice thus the engagement of ICT remain insufficient at global level in education despite the availability of efficient technological resources [12]. Previous research has documented that in developing countries; focus on classroom based technology in consonance with devising the in-service e teachers’ capacity building programme for the overall improvement of the country’s quality of education in needed [13]. Teachers’ professional development is by default an integral part of technology infusing training program [14]. But there are very few studies to assess the impact of short term training on the attitude of in-service teachers towards integrating ICT resources in class room teaching learning. And most of the study was focused on attitude of teachers towards ICT in reference to the length of their experience [15]. So, in developing country like India, how a short-term in-service training may influence the attitude of practicing teachers in integrating ICT & computer in classroom teaching learning is a needed to be studied. So, here a humble endeavor has been made to assess the impact of training on the attitude of practicing teachers towards ICT resources in class room.

2 TEACHERS’ ATTITUDE TOWARDS USE OF ICT AS A PEDAGOGICAL TOOL

Russell et al. (2003) appropriately opined, for bringing change in the practice of adaption of technology for teaching, their belief system to the technology needed to be change [16]. Therefore, it is important for academic administration not to
take attitudes of teachers' attitude regarding use of ICT in teaching for granted [17]. Thus it was a major observable indicator of 21st century classroom use. The need of considering the attitude of teachers before providing them with ICT tools for teaching and learning in a classroom environment reflected from other research too [18]. The negative attitude led to teachers avoiding use of technology and if they did then they passed the phobia and the negative attitudes to their students [19]. Li & Ni (2010) reported that teachers usually had positive attitude to ICT usability because it enabled them integrate the aspects of curriculum and direct students learning respectively [20]. Teaching curricular contents through ICT essentially depends on attitude of teachers towards ICT [21]. Many research works have emphasized like Shaft et.al.(2004) studying ICT and Computer related attitude is most valid way to observe behaviors related to the degree of integration of ICT in the classrooms [22]. Positive outcome could be realized only then if teachers are able to engage technology pedagogically meaningful in the classroom [23] and the capacity building depends on kind of attitude they possess. So studying in-service teachers' attitude towards ICT in class room is becoming area of interest.

3 ICT TRAINING IMPARTED BY SCERT IN WEST BENGAL, INDIA

In consonance with the policy frame work emphasizing the need for capacity building for teacher to enable their smooth transformation to the technology enabled teaching learning practice, INTEL has developed the Educators Academy, with which State Council of Educational Research and Training (SCERT), and the state West Bengal has collaborated to trained Teachers of Primary and Secondary schools with following initiatives:

- Help educators / Teachers to move from a traditional platform to technology able platform.
- To showcase how integrating technology in curriculum can enhance the learning levels of the students.
- To apprise the educators with new and innovative ICT based teaching learning practice.
- To provide ample hands on session to help them get familiar with ICT tools.

The training programme, under Centrally Sponsored Scheme on Teacher Education (CSSTE), the objective was professional development of serving teachers for developing class room & subject matters related basic ICT skills to those who have little or no experience of computer and ICT. The materials for training was localized and translated in to vernacular language. The training was implemented in cascade mode through Mater Trainers, who are also from school. The trainee teachers were selected from schools that have ICT infrastructure.

4 OBJECTIVES

Most of the research established the needs of studying the teachers' attitude towards use of ICT in teaching- learning because ICT cannot be utilized in class room teaching learning without involving the teacher [24]. Till the time, the understanding about in-service teachers' mindset with regard to those technologies for teaching-learning is inadequate and superficial. More over apart from length of experience, how gender, place of residence and stream of teaching may influence the attitudinal aspects is also less understood issue. Keeping this in mind the objectives of our study are as follows:

i. Studying the impact of in- service training on practicing teachers' attitudes towards use of ICT in class room teaching learning.

ii. Studying whether in-service training is impacting differently on Male and Female teachers' attitudes towards use of ICT in class room teaching-learning.

iii. Studying whether in-service training is impacting differently on Rural and Urban teachers' attitudes towards use of ICT in class room teaching-learning.

iv. Studying whether in-service training is impacting differently on Humanities and Science teachers' attitudes towards use of ICT in class room teaching-learning.

v. Studying whether in-service training is impacting differently on Undergraduate and Postgraduate teachers' attitudes towards use of ICT in class room teaching-learning.

5 METHODOLOGY

For the purpose of searching for differences in teachers' attitudes before and after training, this quasi-experimental study was executed using 65 teachers as sample with Pre and Post-Test design. As there is no control group, the interpretation needs to be taken with cautious as finding about group differences may be not only because of interventions. Under this design, data were scrutinized by calculating Mean, SD and Pair t-test.

5.1 SAMPLE

The population of the study comprised of 65 teachers who have been teaching in Government aided secondary schools (9th and 10th grade), teaching in upper primary and secondary section in west Bengal. This target population was chosen because they were undergoes the in-service training on ICT by INTEL-SCERT, W.B. collaboration. This selected population was relevant enough because the respondents were serving under nearly same environment and affected by same factors. The sample was represented by both male & female, rural & urban, humanities& science and undergraduate & post graduate teachers.

5.2 INSTRUMENT

A standardized five point Likert-Scale (Sanchez et. al., 2012) was employed to collect data [25]. The options are given from strongly disagree to strongly agree. The scale contained 25 items and all items were drafted in positive note except two items, vide item no. 5 and 7. The tool was available in English version. Before conducting the study, the 'back-translation' [26] method was used for the development of the instrument in Bengali version. The original scales were applied in Spain for conducting such study and considering the fact that apart from commonness there is a different educational context, the researchers established the validity and reliability of the instrument. After localisation the content validity was approved by five experts in the particular field. The reliability of the instrument of Bengali version was ascertained through test-retest method. This study showed the reliability of the instrument (r = 0.74) is very much in the acceptable limit.

6 RESULT & INTERPRETATION
The abbreviations used in the whole table are as follows:
SD=Standard Deviation, t= Paired t value, df= Degree of Freedom, NS= Not Significant at 0.05 level, S= Significant at 0.05 level

**TABLE 1**
MEAN VALUE OF BOTH PRE-TEST AND POST-TEST OF ALL THE INDIVIDUAL ITEMS OF ATTITUDE SCALE

<table>
<thead>
<tr>
<th>Item no</th>
<th>Statement</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Using internet helps me in developing my syllabus.</td>
<td>3.86</td>
<td>1.01</td>
<td>3.95</td>
<td>1.05</td>
<td>0.54</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>14</td>
<td>I usually find teaching resources for my classes on the internet.</td>
<td>3.31</td>
<td>1.21</td>
<td>3.82</td>
<td>1.1</td>
<td>0.06</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>15</td>
<td>The teaching methodology is enhanced by the use of computing resources.</td>
<td>4.32</td>
<td>0.89</td>
<td>4.46</td>
<td>0.79</td>
<td>0.21</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>16</td>
<td>New technologies help me to obtain more resources to evaluate students' performance.</td>
<td>4.12</td>
<td>0.94</td>
<td>4.09</td>
<td>0.96</td>
<td>0.8</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>17</td>
<td>ICT provides me access to new sources of information for my teaching subject.</td>
<td>4.25</td>
<td>0.75</td>
<td>4.45</td>
<td>0.75</td>
<td>0.12</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>18</td>
<td>ICT makes the attention to diversity in my classroom easy.</td>
<td>4.15</td>
<td>0.78</td>
<td>4.23</td>
<td>0.8</td>
<td>0.57</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>19</td>
<td>ICT helps me in the treatment of students with special educational needs.</td>
<td>4.14</td>
<td>0.92</td>
<td>4.28</td>
<td>0.93</td>
<td>0.25</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>20</td>
<td>New technologies help me to improve the academic performance of my students.</td>
<td>4.05</td>
<td>0.96</td>
<td>4.25</td>
<td>0.85</td>
<td>0.1</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>21</td>
<td>Students are more motivated when using computing resources in the classroom.</td>
<td>4.45</td>
<td>0.75</td>
<td>4.42</td>
<td>0.75</td>
<td>0.73</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>22</td>
<td>Unmotivated students with traditional methodology improve their learning by using computers in the classroom.</td>
<td>4.41</td>
<td>0.73</td>
<td>4.35</td>
<td>0.99</td>
<td>0.66</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>23</td>
<td>The use of ICT increases my motivation as a teacher.</td>
<td>4.12</td>
<td>0.8</td>
<td>4.28</td>
<td>0.8</td>
<td>0.19</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>24</td>
<td>The use of ICT increases my satisfaction as a teacher.</td>
<td>3.86</td>
<td>0.99</td>
<td>4.03</td>
<td>1.03</td>
<td>0.18</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>25</td>
<td>In spite of the existing limitations, I think I have a positive attitude towards the integration of computing resources in the teaching-learning process.</td>
<td>4.40</td>
<td>0.61</td>
<td>4.42</td>
<td>0.7</td>
<td>0.88</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>26</td>
<td>I would use internet in my classroom.</td>
<td>3.66</td>
<td>1.2</td>
<td>3.83</td>
<td>1.18</td>
<td>0.26</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>27</td>
<td>I am willing to collaborate in school educational programs about ICT.</td>
<td>4.23</td>
<td>0.76</td>
<td>4.02</td>
<td>1.02</td>
<td>0.08</td>
<td>64</td>
<td>NS</td>
</tr>
<tr>
<td>28</td>
<td>I would collaborate in other schools educational programs if they focus on the use of internet.</td>
<td>3.88</td>
<td>0.96</td>
<td>3.91</td>
<td>0.99</td>
<td>0.84</td>
<td>64</td>
<td>NS</td>
</tr>
</tbody>
</table>
Among the 25 items in the Questionnaire all are positive items except item no-5 and item no-7. In all items increase of mean value in post-test indicate positive impact while in item no 5 & 7 decrease of mean value in post-test indicate positive impact of training on attitude. The mean score of all items both in case of pre and post test revealed that generally teachers have positive attitude toward ICT and Computer use in class room. Table: 1 show, after pretest and posttest, 7 items i.e. item no. 1, 2, 9, 11, 16, 21 & 22 indicated the mean attitude score of posttest became decreased than pretest, though the mean difference is not statistically significant. On the other, the rest 16 items showed higher attitudinal mean in post-test than pretest i.e. mean values of attitude have increased after exposure to training. Though in case of item no.5 and 7 the mean value of attitude has decreased in post-test but as these two item drafted negatively show such reduction of mean value indicate positives effect of training on attitude. Among all positive responses between pre- test and post-test, the mean difference is highest in the item no. 14. Despite such pattern of mean differences in between pre-test and post-test, in all cases these differences are t statically insignificant at 0.05 levels (p>0.05) in between pre-test and post-test. Moreover, descriptive statistics reveals that in major focal issue like use of internet in class room for various purposes, necessity of computers, interactive digital whiteboards and projectors is widely accepted by in-service trainee teachers and the training has positive impact on these grounds. Not only that, both in case of general students and students with special needs using ICT and computer is considered as instrumental from methodological point of view. Though, the issues like increasing roles of computer and ICT in motivating learner and use computer and ICT in evaluation process are not championed by the participant.

**TABLE-4**

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>102.59</td>
<td>103.41</td>
<td>0.75</td>
<td>16</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

It is evident from the table that the teachers participated in in-service training has positive attitude towards integrating computer and ICT in teaching learning in class room. Table: 2 reflect that the post-test mean of attitude is slightly higher than pre-test mean, though t-value is statistically insignificant (p>0.05). Therefore, the impact of the training is positive on the teachers’ over all attitudes regarding use of ICT in class room.

Table:3 shows In case of male teachers, the mean value of pretest and posttest were respectively 101.46 and 102.21 that is the mean value of attitude of in case male teachers was slight higher after exposure to training. Though, the training has positive impact in terms of attitude but the t-value indicated that this difference is statistically insignificant (p>0.05).

Similarly in table-4 in case of female teachers the mean values of pretest and post-test are 102.59 and 103.41. So, here also the impact of training on attitude is positive but t-value 0.75 indicated the difference is insignificant statistically (p>0.05). Thus gender as a social construct failed to influence the impact of training on attitudinal aspects of serving teachers towards use of ICT in class room.

**TABLE-5**

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>102.53</td>
<td>103.33</td>
<td>0.093</td>
<td>29</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

Table:5 shows in case of rural teachers, the mean value of pretest and posttest are respectively 102.53 and 103.33. This indicated that the mean value of attitude of rural teachers is higher after exposure to training. Thus training has clearly impacted positively on attitude of rural teachers though t-value indicates the difference between pre-test and post-test mean among teachers with rural background is statistically insignificant (p>0.05).

**TABLE-7**

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.83</td>
<td>104.04</td>
<td>0.13</td>
<td>23</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

On the contrary, it is revealed from the same table (Table: 6) that the pretest and posttest mean of attitude of urban teachers are respectively 101.09 and 100.11. It is obvious from the result that the training does not only failed to impact in positive manner on attitude of urban teachers, rather the impact is slightly negative, though t-value does not approve the difference as significant from statistical point of view.

Table-7 shows in case of humanities teachers, the mean value of pretest and posttest are respectively 100.83 and 104.04. This indicated that the mean value of attitude of humanities teachers is higher after exposure to training. Thus training has clearly impacted positively on attitude of humanities teachers.
TABLE- 6
PRE-TEST & POST-TEST MEAN DIFFERENCE OF ATTITUDE OF ALL URBAN RESPONDENTS TOWARDS USE OF ICT

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>101.09</td>
<td>100.11</td>
<td>0.728</td>
<td>34</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

though t-value indicates the difference between pre-test and post-test mean among teachers with rural background is statistically insignificant (p>0.05).

TABLE- 8
PRE-TEST & POST-TEST MEAN DIFFERENCE OF ATTITUDE OF ALL SCIENCE SUBJECT TEACHERS TOWARDS USE OF ICT

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>102.29</td>
<td>101.63</td>
<td>0.78</td>
<td>40</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

On the contrary, it is revealed from the same table (Table: 8) that the pretest and posttest mean of attitude of science teachers are respectively 102.29 and 101.63. It is obvious from the result that the training does not only failed to impact in positive manner on attitude of urban teachers, rather the impact is slightly negative, though t-value does not approve the difference as significant (p>0.05) from statistical point of view.

TABLE- 9
PRE-TEST & POST-TEST MEAN DIFFERENCE OF ATTITUDE OF ALL UNDERGRADUATE TEACHERS TOWARDS USE OF ICT

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.94</td>
<td>102.22</td>
<td>0.016</td>
<td>17</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

Table:9 shows in case of undergraduate teachers, the mean value of pretest and posttest are respectively 97.94 and 102.22. This indicated that the mean value of attitude of undergraduate teachers is higher after exposure to training. Thus training has clearly impacted positively on attitude of undergraduate teachers though t-value indicates the difference between pre-test and post-test mean among teachers with rural background is statistically insignificant (p>0.05).

TABLE-10
PRE-TEST & POST-TEST MEAN DIFFERENCE OF ATTITUDE OF ALL POSTGRADUATE TEACHERS TOWARDS USE OF ICT

<table>
<thead>
<tr>
<th>Pre-test (Mean)</th>
<th>Post-test (Mean)</th>
<th>t</th>
<th>df</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>103.21</td>
<td>102.64</td>
<td>0.79</td>
<td>46</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

On the contrary, it is revealed from the same table (Table-10) that the pretest and posttest mean of attitude of postgraduate teachers are respectively 103.21 and 102.64. It is obvious from the result that the training does not only failed to impact in positive manner on attitude of postgraduate teachers, rather the impact is slightly negative, though t-value does not approve the difference as significant (p>0.05) from statistical point of view.

7 DISCUSSION AND RECOMMENDATION
Teachers are challenged while trying to introduce ICT in classroom teaching. To improve this situation; teachers’ ICT skills are needs to be enhanced that mainly depend on professional development programs [27]. The present study while trying to assess the impact of in-service training on attitude, came out with two specific findings; one the design of training was inadequate to bring the satisfactory attitudinal change in the practicing teachers towards use of ICT in class room and the impact of training was not identical in reference to attitude towards use of ICT and computer, on serving teachers who have different back ground in terms of gender, place of residence, stream of teaching and qualification. The study also reveals that though they had a willingness to use technology in teaching, but in practicality they are not motivated enough to integrate computer and ICT in teaching learning in regular basis as reflected from the negligible difference in pre-test and post-test mean. It may be so that the need assessment of training at local level is remain neglected while designing and implementing ICT training. So, they acknowledge the importance of using computer, internet, interactive white board and other technological tools, but failed to show adequate positive attitude in integrating technology in curriculum transaction. Even they don’t expect too much that ICT may be purposeful in motivating the learner. Even they remain less enthusiastic in using computer and ICT in the process of evaluation. Moreover, the present study established that the teachers group who belongs to rural area having low exposure in technology, humanities group generally less savvy with technology and undergraduate having less opportunity of technology exposure may get boosting from such training and show positive attitude in using the technology in class room. But their counterpart that is urban-post graduate-science teachers has already such kinds of exposure and expertise and this kind of training design may not fit for them. They may have other kinds of problems in integrating ICT therefore, their needs are completely different. Thus we understood from training pedagogy perspectives that a rigid encapsulated design of training is not just befitting for all without consulting their needs. The teachers may needs different kinds of motivation as supported by the findings of Afshari et.al( 2009) [14] who suggested that the professional development design needs unique kind of motivation and incentives. Such design of short-term trainings are brief in unbalanced manner having too much agenda to cover that ends up making teacher frustrated and without tangible take away [12]. Finally, as some items were trying to assess the attitude related with pedagogical implication of technology, the findings indicates the training failed to capacity building of teachers in understanding the pedagogical aspects of using ICT in curricular teaching learning. Because training ends up with teaching technology not how to integrate and use technology in learning process [28] and the unique multi-layered relationship among content, technology & pedagogy, has not been meaningfully addressed [29], [30], [31] and despite having tremendous potential of student centered constructivist learning by enhancing creative thinking and by social inter action [32], [33], [34] the computer and ICT remain non-instrumental in class room in reality. In the same tune of findings of
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REFERENCES

NDIBALEMA, (2015) [35], it may be concluded that engagement of ICT needs a thorough empirical investigation as a pedagogical tool considering teachers’ perception, feeling, belief systems, motivation, self-confidence, efficacy to handle the ICT resources and the classroom practices through observations with adequate sample in real setting.


