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ICT TRAINING FOR FACULTY DEVELOPMENT IN DIET GANDERBAL, J&K

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ABSTRACT

Teacher Education Institutions or District Institutes of Education and Training (DIET) in J&K need to develop strategies and plan to improve the teaching-learning process to assure that all future teachers are well prepared/equipped to use Information Communication Technologies (ICTs) . They are facing the challenge of preparing a new generation of teachers to make the best use of technology at their level. So, in order to ensure teacher educators to have knowledge and skills of using the new technology, a training programme in ICT was designed by DIET Ganderbal. The purpose of the programme was to make the DIET faculty aware about operation and use of ICT, computers and internet for developing their teaching strategies and improving learning outcome of students. It was an attempt to develop a healthy positive attitude of the teacher educators towards the new technology and its importance in our teachers training programmes.

KEY WORDS

DIET Ganderbal, Efficacy, Information Communication Technology (ICT), Workforce

INTRODUCTION

In the new paradigm shift technology motivates both students and teachers thereby energizing teaching-learning processes. With the inevitable proliferation of ICT in the classroom, the role of the teacher is no longer sufficient to merely impart content knowledge. However, it has become crucial for teachers to encourage critical thinking skills, promote information literacy, and to prepare children for a new world. ICT gives access to an exponentially growing storehouse of information sources, almost unlimited networks of people and computers, and unprecedented opportunities for learning and research. It is a network of networks, providing opportunities for enquiry-based learning where teachers and students are able to access some of the world's richest information. Through ICT, students and teachers are able to connect with each other, learn flexibly, and collaborate with others around the world. Generally speaking, geographical distance is no longer a barrier, and the age of the 'borderless provision of education' is possible now. Teaching strategies, teaching resources and a wealth of information can be shared to the extent

that it is now impossible to comprehensively track the amount of information available through internet. Hence one of the new roles of the teacher within the electronic classroom is to separate quality information from misinformation. Hence , identification, classification and authentication of electronic information sources is critical.

Teachers must begin to reappraise the methods through which they meet children's learning needs and match curricula to the requirements of human thought. Traditional methods of imparting knowledge, such as lectures, books etc. are characterized by a linear progression of information. The human mind is far more adaptable wherein non-linear strategies can be used for problem solving and act as a storehouse for retrieval of information .Working with the computer is the greatest challenge for our teachers. Professional development of teachers is crucial to optimal use of any successful technology in an education programme. Hence the training of the teachers must be well recognized and identified. In this backdrop, the workforce of DIET, Ganderbal was one of the options for the skillful training regarding use of ICT in general and computers in particular.

Objectives of the Programme

The main objectives of the training programme was to provide knowledge and skill to the participants about operation of computer, use and application of internet and website for improving teaching-learning practice. The purpose of the programme was to make the DIET faculty aware about use of ICT, computers and internet for developing their teaching strategies and improving learning outcome of students. It was an attempt to develop a healthy positive attitude of the teacher educators towards the new technology and its importance in our teachers training programme. Besides this focus was laid on the following aspects during training.

- To empower the DIET faculty in the use of Information Communication Technology (ICTs) for effective classroom transaction and quality teacher education programme.
- To provide training on the use of Hypertext Markup Language(HTML) for the development of multimedia content and ICT enable teacher education programme.
- To orient the DIET faculty in the using of emerging ICTs like multimedia, internet, website etc for effective classroom process.

REVIEW OF LITERATURE

According to Reiser and Dempsey (2012) in 1950 researchers at IBM developed the first Computer Aided Learning (CAL) author language and designed CAL programs for public schools. The Centre for Social Organization of Schools , 1983 reported that by January 1983, more than 40% of elementary schools and 75% of Secondary Schools used computers for instruction purposes in the United States of America. Since 1995, rapid advances in information technology strongly increased the interest in the use of technology for instructional purposes.

Many studies have been conducted to review and synthesize the outcomes of the use of advanced technology.

Waxman, Camell and Gray (2003) reviewed and synthesized research on the effects of teaching and learning with technology on students cognitive, affective and behavioral outcomes of leaning. Statistical data from 20 studies that contained a combined sample of approximately 4,400 students was used to compute the effect sizes and found that the average effect size across all outcomes was 30. The results indicated that the effect on student outcomes when compared to it was small.

Blok, Ostdum, Otter and Overmost (2002) in their study examined the effectiveness of computer technology programs in supporting beginning readers and found that the corrected overall effect size estimate was 19 which was based on 42 studies. Their findings indicated that the effects of computer programs have positive but small effects.

Christmann and Badgett (2000) examined 18 studies for the effectiveness of computers and found an overall mean effect size of 0.127. The results indicated students who received supplementary computer technology course performed slightly better than those who did not. Furthermore this study found that technology use was most effective in Aviation and English and least effective in Mathematics and Music. In a similar study, 42 students were examined for the effect of computer technology on student achievements in Science.

Most of the computer research studies reported positive effect on the achievement of students at different educational levels. Based on this research review, it is anticipated in this study, the teacher educators who would update themselves in the use of technology (ICT) would prove to be more effective than those who would not.

Objectives of the Study

The following objectives were set forth for the investigation

1. To study the mean percentage of achievement of participants during the ICT training.
2. To study the difference in mean score of achievement of participants during ICT training.
3. To study the difference in variation between trials (tests) and subjects (participants).
4. To study the difference among subjects (individual difference) and practice difference (between training) among participants.

Hypotheses of the Study

Keeping in view of the above objectives, the following hypotheses were formulated and tested under the present study:

- There is no significant difference/improvement in mean percentage of achievement of trainees

- There is no significant difference between the mean score of achievement of trainees.
- There is no significant difference in variation between trials (tests) and subjects (trainees).
- There is no significant difference (individual difference) among subjects than practice difference (between training).

METHODOLOGY OF THE STUDY

Sample and Technique

The sample of the study constitutes 31 DIET faculty of Ganderbal (22 Male and 9 female). For fulfilling the objective of the study, an achievement test was prepared and administered to collect relevant data. This was a comprehensive test which was developed to assess the learning achievement of participants.

Pre-test and post-test experimental design was adopted to find out the significant difference in achievement of participants due to the training and other related aspects.In order to analyse and interpret the collected data statistical technique like mean percentage, difference in mean percentage, 't' test and F-test were employed.

DATA ANALYSIS

On the first day of the training after inaugural session (before applying intervention) a test was administered on the participants(pre-test).The objective of administering pre-test was to find out the entering knowledge of the participants on the subject matter on which training is to be imparted. Again during the last session of 3rd day of the training, a test was administered (mid-test) on the same group of participants. The objective was to check the progress of participants as well as to assess the intervention strategy. Finally on the last day before valedictory session, a test was administered (post-test) on the same group of participants with the same achievement test which was administered on the first day. The mean achievement of the pre-test score, mid-test score and post-test score were calculated separately. The significant difference between mean scores was determined by applying statistics as mentioned above. On the basis of which relative improvement of participants, individual difference among participants was determined.

TABLE 1: MEAN, MEAN PERCENTAGE AND DIFFERENCE IN MEAN PERCENTAGE OF VARIOUS TESTS

S.No.	Test	Mean	Mean %age	Difference in Pre Test and Mid test	Difference in Mid test and Post Test	Difference in Pre Test and Post test
1	Pre Test	21.03	42.06	2.64	10.30	12.94
2	Mid Test	22.35	44.70			
3	Post Test	27.50	55.00			

The above table reveals that the mean of the Pre Test score (21.03) is less than the mean of Mid test score (22.35) and Post Test score (27.50). Similar is the situation regarding the mean percentage of Pre Test (42.06), Mid Test (44.70) and Post Test (55.00). The difference in mean percentage of Pre Test score to that of Mid test score was 2.64. This implies that the relative gain in achievement is only 2.64%. Again relative gain in achievement in post test with regard to mid test is 10.30% whereas it has been observed to be 12.94% from pre test with regard to that of the post test. This reflects the efficacy of the training intervention provided to faculty of DIET Ganderbal as there is significant improvement in the achievement level of the participants due to the training programme.

TABLE 2: Analysis of Variance Between The Tests and Subjects

S.No	Between Tests	Sources of Variation	Df	Sum of Scores	Mean Variation	F – Value	t - Value
1	Pre test & Mid test	Between Training	1	27.12	27.12	1.22	1.10
		Among subjects	30	1099.68	36.66	1.65	
		Interaction	30	667.38	22.25		
2	Mid test & Post test	Between Training	1	412.96	412.96	10.41	3.23
		Among subjects	30	1189.74	39.66	09.27	
		Interaction	30	128.44	4.28		
3	Pre test & Post test	Between Training	1	651.63	651.63	18.19	4.26
		Among subjects	30	1074.84	35.83	01.40	
		Interaction	30	767.87	25.59		

From Table 2 it is revealed that the calculated value of "F" for training in pre-test to mid-test is 1.22 which is much lower than table value at 0.05 and 0.01(4.17 and 7.56 respectively) level showing no real improvement took place here. But in case of mid-test to post-test, there exists a significant improvements calculated value is 10.41 is much higher than table value at both levels. Similar is the situation with regard to pre-test to post- test where the calculated "F" value is 18.19, much higher as compared to table value. So, there is strong evidence of real improvement of all the participants during the training programme from mid-test to post-test and pre-test to post-test.

Also calculated value of "F" as regards subject is 1.65 in pre-test to mid-test which is higher than the table value of 1.62 at 0.05 level but lower than 2.01 at 0.01 level. This indicates that no participant is better than that of their counterpart and almost all were equally benefitted during the training programme. There is no individual difference with regard to the impact of training programme on participants. Even if there exist a very small difference, it was due to practice and

not due to training intervention. With regards mid-test to post-test, calculated value of "F" is 9.27 which is much higher than the table value at both levels. In case of pre-test to post-test the value is 1.40 which is much lower than the table value at both levels.

TABLE 3: Comparison of Individual Difference (among subjects) and Practice Difference (between training)

S.No	Between tests	Sources of Variation	Dt	Mean Square variation	F – Value
1	Pre Test & Mid Test	Between Tests	1	27.12	1.35
		Among Subjects	30	36.66	
2	Mid Test & Post test	Between Tests	1	412.96	0.096
		Among Subjects	30	39.66	
3	Post Test & Pre Test	Between Tests	1	651.63	0.05
		Among Subjects	30	35.83	

As indicated in Table 3, the calculated 'F' value (for pre-test and mid-test) 1.35 is much more lower than Table Value 254.32 at 0.05 level and 6366.48 at 0.01 level. This implies that individual differences were not greater than practice differences whatever differences exists due to practice not due to participants' individual differences. Again we can say that certain participants have shown greater degree of positive attitude towards training than others. Similar is the situation with regard to mid-test and post-test (F=0.09) and pre-test and post-test (F=0.05).

TABLE 4: ***MEAN, MEAN PERCENTAGE AND DIFFERENCE IN MEAN PERCENTAGE OF Men and Women in VARIOUS TESTS***

S.No.	Gender	Test	Mean	Mean %age	Difference in Pre Test and Mid test	Difference in Mid test and Post Test	Difference in Pre Test and Post test
1	Women	Pre Test	20.78	41.56	5.78	7.46	13.24
		Mid Test	23.67	47.34			
		Post Test	27.40	54.80			
2	Men	Pre Test	21.14	42.28	0.08	12.74	12.82
		Mid Test	21.18	42.36			
		Post Test	27.55	55.10			

It is noticed from the above table 4 that the mean pre-test score of female participants (M=20.78) is less than that of mid-test (M=23.67) and post-test (M=54.8). There exists a gradual increase in performance. Similar is the situation with regard to performance of male participants where

mean score of pre-test is 21.14, mid-text is 21.18 and post test is 27.55. with regard to the mean score of male and female participants much more variation is not noticed in each test though the mean score of male participants in pre-test and post test is slightly more as compared to mean score of female participant but it can be neglected. In case of female participants, the difference in mean percentage of pre-test score to that of the mid-test score is 5.78 i.e. relative gain in achievement is 5.78 percent. Whereas the relative gain in achievement in case of male participant at same stage is only 0.08 percent. The relative gain in percent from mid test to post test in case of female is 7.46 percent and in case of male it is 12.74 percent. Male participants show a greater degree of achievement than female from pre-test to post test. Similarly is the situation from pre-test to post test. The relative gain in percent of male participants is 12.82 whereas in case of female it is 13.24. Again it reflects the effectiveness of the training intervention provided to the Faculty of DIET Ganderbal in ICT on male participants as well as female participants. Hence, there is a significant improvement in achievement level of male and female participants due to training programme.

TABLE 5: Analysis of Variance Between The Tests and Subjects F and T Test in case of Females

S.No	Between Tests	Sources of Variation	Df	Sum of Scores	Mean Variation	F – Value	t – Value
1	Pre test & Mid test	Between Training	1	37.56	37.56	1.09	1.04
		Among subjects	8	305.12	38.14	1.02	
		Interaction	8	276.44	34.56		
2	Mid test & Post test	Between Training	1	64.23	64.33	2.62	1.62
		Among subjects	8	302.45	37.81	1.55	
		Interaction	8	219.77	24.47		
3	Pre test & Post test	Between Training	1	200.00	200.00	51.55	7.18
		Among subjects	8	260.78	32.59	08.39	
		Interaction	8	31.00	3.88		

Table 5 shows the calculated value of 'F' for training in pre-test and mid-test is 1.09, which is lower than table value 5.32 at 0.05 level and 11.26 at 0.01 level. This indicates that no real improvement occurred from pre-test to mid test. Similar is the situation with regard to mid-test to post-test. But in case of pre-test to post-test there exist a significant improvement as the calculated value F is 51.55 which is much higher than table value at both levels. So, there is a strong evidence of real improvement that took place from pre-test to post-test i.e. there exist a significant improvement of all female participants from pre-test to post-test. It is definitely due to the intervention provided during six-day of training to the participants.

Also, the calculated value of F for subject is 1.02 in pre-test and post test, is 1.55 in mid-test and post-test (lower than that of table value 3.44 at 0.05 level and 6.03 at 0.01 level) whereas the calculated value in pre-test and post test for F subject is 8.39 which is much more than that of table value at both levels. This indicates that no subject is better than that of their counterparts as such intervention is equally effective to all participants. In other words all female participants were equally benefited from this intervention of six day programme. There is no individual difference among the female participants with regard to impact of training. Even though there exists a very small difference, it was due to practice not because of intervention.

TABLE 6: Comparison of Individual Difference (among subjects) and Practice Difference (between training) in case of Females

S.No	Between tests	Sources of Variation	Df	Mean Square variation	F – Value
1	Pre Test & Mid Test	Between Tests	1	37.56	1.01
		Among Subjects	8	38.14	
2	Mid Test & Post test	Between Tests	1	64.23	0.59
		Among Subjects	8	37.81	
3	Post Test & Pre Test	Between Tests	1	200.00	0.16
		Among Subjects	8	32.59	

Table 6 presents F value 1.01 for pre-test and mid-test which is much lower than table value 238.89 at 0.05 level and 5981.34 at 0.01 level. This indicates that individual differences were not more importance than practice difference. Inspite of it, whatever differences exist in the mean score achievement of female participants was due to practice not due to differences in individuals. Again, we can say that certain participants have shown greater degree of positive attitude towards training than other. Similar is the situation with respect to the mid-test and post-test (F=0.59) and pre-test and post-test (F=0.16).At no level individual difference among the female participants plays a significant role. So, practice difference plays a significant role than individual difference.

TABLE 7: Analysis of Variance Between The Tests and Subjects F and T Test in case of Males

S.No	Between Tests	Sources of Variation	Df	Sum of Scores	Mean Variation	F – Value	t – Value
1	Pre test & Mid test	Between Training	1	5.12	5.12	0.31	0.56
		Among subjects	21	787.48	37.49	2.26	
		Interaction	21	348.38	16.59		
2	Mid test & Post test	Between Training	1	360.82	360.82	20.22	4.49
		Among subjects	21	900.05	42.86	2.40	
		Interaction	21	374.68	17.84		
3	Pre test & Post test	Between Training	1	451.84	451.84	8.76	
		Among subjects	21	1083.39	51.59	2.48	
		Interaction	21	436.66	20.79		

Table 7 notifies that the calculated value of 'F' for training in pre-test and mid-test is 0.31 which is much lower than Table value 4.32 at 0.05 level and 8.02 at 0.01 level. This indicates that no significant improvement has occurred from pre-test to mid-test in terms of achievement of participants. But in case of mid-test to post-test F value for training is 20.22 and as well as from pre-test to post test it is 8.76 which indicates that there exists a significant improvement as calculated values are much higher than that of table values at both levels. This indicates significant improvement in achievement of male participants from mid-test to post-test and as well as from pre-test to post-test. It again reflects the efficacy of the intervention on achievement of male participants.

Further it is revealed from the table 7 that calculated value of F for subjects are 2.26 , 2.40 and 8.76 in pre-test to post test, post test to mid test and pre test to mid test, respectively is higher than that of the table value 2.05 at 0.05 level but lower than that of table value 2.80 at 0.01 level. This shows that no male participants are better than that of their counterparts and the intervention provided is equally effective to all male participants i.e. all male participants were equally benefited during the training programme. Hence, we can say that there is no individual difference with regard to impact of training programme on male participants. Even if there exist some difference, it may be due to practice of participants.

TABLE 8: Comparison of Individual Difference (among subjects) and Practice Difference (between training) in case of Male

S.No	Between tests	Sources of Variation	Df	Mean Square variation	F – Value
1	Pre Test & Mid Test	Between Tests	1	5.12	7.32
		Among Subjects	21	37.49	
2	Mid Test & Post test	Between Tests	1	360.82	0.12
		Among Subjects	21	42.86	
3	Post Test & Pre Test	Between Tests	1	451.84	0.11
		Among Subjects	21	51.59	

As far as the statistical data presented in Table 8 is concerned, the calculated 'F' values 7.32 , 0.12 and 0.11 for pre-test to mid-test, mid test to post test and pre test to post test respectively is much more lower than that of the table value 249.004 at 0.05 level and 6234.16 at 0.01 level. This reveals that individual differences among male participants were not greater than practice difference. Whatever differences exist as indicated from the mean score of achievement among the male participants was definitely due to practice not due to difference in individual.

Again we can say that certain male participant have shown greater degree of positive attitude towards training than that of their counterparts. Hence, there is no significant individual difference noticed among male participants with regard to training except practice difference.

Findings

The findings of the present study are discussed under four different heads, viz,

- Achievement of all the participants (both male and female) as a Whole.
- Achievement/performance of all female participants.
- Achievement/performance of all male participants.
- Comparison of achievement of male and female participants.

Achievement of the Participants (Male and Female) as a Whole

1. Average achievement of participants (M=27.5) and their mean percentage (55.0) in post-test is much higher as compare to that of pre-test average achievement (M=21.03) and mean percentage (42.06) so performance/achievement of participants (on the aspects of website development, internet ICT etc.)

2. There is no significant difference between average achievement of participants in pre-test with that of mid-test (mean difference 0.32 , t=1.65) as well as mid test with that of post-test (mean difference 5.15, t=1.51). But the mean difference between pre-test and post-test (mean difference 6.47. t=5.13) significant. That is there exists a significant difference between mean achievement of participants in post-test with regard to pre-test. It reflects the efficacy of training interventions on achievement of DIET faculty.
3. There is no significant improvement in achievement of participants from pre-test to mid-test ($F_{training}$ =1.22,df_1=1 , df_2=30) but the improvement in achievement from mid-test to post ($F_{training}$ =10.41,df_1=1 , df_2=30) and pre-test to post-test ($F_{training}$ =18.19,df_1=1 , df_2=30) is significant. Hence, the evidence against real (significant) improvement in achievement of participant is very strong and statistically proved.
4. No participant is better than that of his/her counterpart with regard to intervention at 0.01 level (F subject = 1.65 . dt_1=30. dt_2=30) i.e intervention is equally effective to all participants. In other words all participants equally benefited from this training programme.
5. There is individual difference with respect to impact of training programme on participants except practice difference.
6. Efficacy of the training programme is equally effective on all participants without having individual difference from mid-test to post –test (F subject 10.41, df_1=30 , df_2=30) and pre-test to post-test (F subject = 18.19 , df_1=30 , df_2=30).
7. There was no significant individual difference noted among participants on all the three phases i.e. pre-test to mid-test (F = 35 , df_1=1 , df_2=30), mid test to post test (F=0.09 , df_1=1 , df_2=30) and pre-test to post-test (F=0.05, df_1=1 , df_2=30) with regard to training except certain amount of practice difference.

Achievement/Performance of All Female Participants

1. Mean achievement of female participants (M=27.4) and their mean percentage (54.8) in post-test is much higher than that of pre-test (M=20.78, mean percent = 41.56) and mid-test (M=23.67, mean percent=47.34). So, performance of female participants was improved significantly during the training programme, as the difference in mean percentage from pre test to post-test is 13.24.
2. There is no significant improvement observed from pre-test to mid-test (F training = 1.09) and mid-test to post-test(F training = 2.62) but the improvement in achievement from pre-test to post-test (F training = 51.35) is significant i.e there exist a significant improvement of all female participants during training intervention.
3. No female participant is better than that of their counterparts (F subject= 8.39) from pre-test to post-test i.e. all female participants are equally benefited from this training programme.

4. No individual difference was found among the female participants with regard to effectiveness of the training programme. However, the small difference whatsoever exists was due to practice not because of intervention.
5. Individual differences were not more important than practice difference. As certain participants had shown greater degree of positive attitude towards training than other. At no level (pre-test to mid-test , mid-test to post-test, pre-test to post-test) individual difference among female participants plays a significant role, rather effect of practice difference is being reflected in the mean achievement of female participants.

Achievement/Performance of All Male Participants

1. Mean achievement of male participants (M=27.55) and their mean percentage (55.1) in post-test is much greater than that of pre-test (M=2.14, mean percentage = 42.28) and mid test (M=21.18, mean percentage = 42.36). So the performance of male participants was improved steadily during training programme.
2. There was positive impact of training programme on male participants as revealed from the difference in mean percent 12.82 (from pre-test to post-test).
3. There is no significant improvement occurred from pre-test to mid-test in cases of male participants ($F_{training}$ = 0.31 , df_1=1 , df_2=21) whereas improvement in achievement from mid-test to post-test (F=20.22) and pre-test to post-test (F=6.76) is significant. It shows the real effectiveness/impact of training intervention designed for DIET faculty in Ganderbal.
4. No male participant is better than that of their counterpart at 0.05 level as (F subject = 2.26, 2.40 and 8.76)from pre-test to mid-test, mid test to post-test and pre-test to post test respectively) i.e. all participants are equally benefited out of the training intervention.
5. There is no individual difference with regard to effectiveness of training intervention on male participants. However, the small difference whatsoever was noticed, may be due to rigorous practice of certain participants.
6. Individual differences among male participants were not greater than practice difference. But the difference as we observe from achievement scores was definitely due to practice not because of individual difference as a trait.
7. Certain male participants had shown greater degree of positive attitude towards training programme than that of their male counterparts.

Comparison of Achievement of Male and Female Participants.

1. The difference in mean achievement of male and female participants in various tests is not significant.
2. The intervention provided by trainers was equally effective of both male as well as female participants.

CONCLUSION AND RECOMMENDATIONS

The present study was conducted with a view to improve the skill of participants and broaden their horizon towards ICTs and its use in the present system of education and teacher education programme. As such the findings of the study provide many salient information which need to be improved. A thorough systematic and scientific training programme can definitely facilitate the participants to join their hand in the use of ICT in classroom transactions. Again, there is a need for systematic monitoring and evaluation of each component of training programme. All the personnel involved in planning, designing and executing should receive constructive suggestions / feedback recurrently so as to translate it in to action. Research must be made an integral part of every programme of the system so as to develop the same for the future and to make it effective. The analysis indicates that we are making progress towards the achievement goal of ICT. But our specific observations based on the present study require strategic planning and implementation. The following recommendations have been proposed for the purpose.

- Individuals having keen interest on computer should be given more and more opportunity for training on ICTs.
- Individuals who are at the end of their services (likely to be retired) should not be given opportunity to undergo such training as they do not exhibit interest and inclination towards learning.
- Training programme should be organized at regular intervals so as to motivate the participants to integrate ICTs in their work place.
- Supporting material should be provided to the participants before and after the training session.
- Such programme should constitute a part of pre-service and in-service training for the teachers so as to accommodate them in the information communication age.
- Feedback study should be undertaken so as to know how far the participants using/applying the subject at their work- place.

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