# Applying ADDIE Model to Evaluate Faculty Development Programme

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# Abstract

We exist in a technology era where everything is controlled via electronic devices and education is also highly impacted from ICT (information and communication technology) tools. The present study is an attempt to highlight the training need analysis approach and its applicability. Further, it focuses on the application of ICT tools to analyse the data patterns during training need. ADDIE approach has been chosen to explore the correlation between techniques/approaches of training need analysis and evaluation of training programme.

#### INTRODUCTION

Education is a fundamental human right and since Independence, there have been various attempts at improving the status of education in India. The significance of education has been enshrined by the founding fathers in the Indian Constitution, and Article 45 of Indian Constitution states—

*"The State shall endeavor to provide, within a period of ten years"* 

from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years (MHRD, 2017)."

The Constitution of India provides various constitutional provisions with reference to education and equity under Articles 15, 16, 19, 25, 28, 29, 46, 146, 244, 330 and 335. In spite of these constitutional and legislative provisions, the outcome is not as

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healthy as it must be. The child is the focus of our whole education system and teachers play a pivotal role in shaping the child's ideology. The quality of education depends largely on the quality of its teachers, but this observation has not been expanded to the intention that quality teachers come out from the institutions where high-quality teacher educators exist. A significant contribution of teacher preparation in its development of teachers' aptitude to examine teaching from the learners' point of view brings diverse experiences and analogies to the classroom (Darling-Hammond, 2000).

Although there are serious drawbacks in teacher preparation programmes either in-service or preservice, formal teacher education persists to have low 'ecological validity', and emphasises tensions in the selection and technical expertise of DIET staff, and in their attitude towards basic teachers, that confine engagement with local contexts (Dyer et al., 2004). According to Anurag Behar, CEO, Azim Premji Foundation, there are four methods to improve our education system-

- In order to perform better. the faculties must be paid better. which will then lead improvement to (Ballou and Podgursky, 1997).
- Government should attempt to attract scholastic fraternity to become teachers. Coherent salary packages, high standard recruitment practices and

conditions to support professional satisfaction are some key areas which should be kept into consideration.

- There is no alternate of a good teacher and the capacities of teachers must be developed to perform better via high-quality teacher trainings.
- Professional development of existing workforce is a must to improve the education system.

teachers The who are more prepared for teaching are more confident and successful with students than those who have had little or none (Darling-Hammond, 2000). The research also indicates that the reforms in teacher training programmes (e.g., integrated/ professional programmes) resulted into more effective teaching fraternity who wish to stay in this profession. The policies implemented by States regarding teacher training and professional development may create a significant difference in the qualifications and capacities that teachers bring to their profession (Darling-Hammond, 2000). Policy recommen-dations comprise the development and upgrading of teacher training programmes in India as well as other developing countries, along with thorough research into the demographic, structural and cultural framework for each programme and focusing on the advancement of teacher knowledge and aptitude in specific subject areas.

#### **R**EVIEW OF LITERATURE

The ADDIE Model was first developed by Florida State University for inservice training of military personnel and was further extensively applied for other relevant areas. The most extensively used style for developing training programmes is new Instructional Design (ID). This sequential approach offers а system to evaluate the learners' requirements, design the and development of training objects, and the evaluation of the usefulness of the training programme (Kruse, 2002). Instructional designers believe that the use of systematic design procedures can make instruction more useful. well-organised and applicable than less precise approaches to planning instruction.

The system approach entails an analysis of how its constituents interrelate with each other and requires synchronisation of all activities. Nevertheless, a multiplicity of systematic ID processes (Dick, Carey and Carey, 2005, Kemp, Morrison and Roos, 1998, Ragan and Smith, 1999) have been illustrated, but all descriptions comprise the core components of Analysis, Design, Development, Implementation and Evaluation (ADDIE) to ensure analogy among goals, strategies, evaluation as well as the efficacy of the resulting instruction (Gustafson and Branch, The ADDIE 2002). model is а practical and easy framework for ID. The process can be applied in a multiplicity of settings, because of its methodical and generic structure.



Figure 1. ADDIE Model

The structure provides trainers by recognising the trainee needs and applies this information to the design and development of the training programmes (Petersen, 2003).

#### Objectives of the Proposed Research

The objectives of this research are to-

- explore the correlation between the various approaches of training need analysis and evaluation of training programmes;
- explain the relationship between the data analysis techniques and evaluation of training programmes and
- explore the ADDIE Model with the help of appropriate data sets.

#### **H**ypothesis

**H**<sub>o</sub>: There is no significant relationship between Techniques of Training Need Analysis and Evaluation of the Training Programme

**H**<sub>0</sub>: There is no significant relationship between Approaches of Training Need Analysis and Evaluation of the Training Programme

#### **Research Methodology**

ADDIE Model has been used for the purpose of research. A questionnaire has been developed using the various components of ADDIE Model, *viz.*, Analysis, Design, Development, Implementation and Evaluation. Demographic profile of the respondents has been sought in the form of their age, work experience, designation and qualification, which will further assist the study. Respondents were supposed to supply their views on a five-point Likert scale ranging from 1—Strongly Agree (SA), 2—Agree (A), 3—Neutral (N), 4—Disagree (D) and 5—Strongly Disagree (SD). The collected data has been analysed using R Programming to explore the necessary statistic (Chi Square Value and Karl Pearson Coefficient of Correlation) to relate various variables identified in the study.

#### Sampling

For the sampling purpose, the faculty members of District Institute of Education and Training (DIET) in Uttarakhand have been selected randomly using Stratified Random Sampling Method, because it provides a better estimate of the whole and it results in more reliable and detailed information. DIETs<sup>1</sup> act as nodal agencies to provide academic development and literary support at district level to all the elementary level teachers and it is their prime responsibility to strengthen the teaching aptitude among teaching fraternity. There are 13 DIETs functioning in the State, Tehri, Gauchar, Ratura, Roorkee, Charigaon, Barkot, Dehradun, Almora, Lohaghat, Bageshwar, Didihat, Bhimtal and Rudrapur and there are approximately 215 faculty members working in various departments (In-service Programmes Field Interaction

<sup>&</sup>lt;sup>1</sup>DIETs act as lightouse in the field of education, as stated by MHRD.

Demogra	phic Profile	Frequency	Percentage (%)
Designation	Lecturer	88	88
	Senior Lecturer	12	12
	Masters with B.Ed.	42	42
Highest Qualification	Masters with M.Ed.	42	42
	Ph.D.	16	16
	<10 Years	24	24
Francisco (in Versus)	11–20 Years	24	24
Experience (in Years)	21–30 Years	40	40
	>30 Years	12	12
Candan	Male	42	42
Gender	Female	58	58
	25–35	16	16
Age (in Years)	36–45	47	47
	46–60	37	37

Table 1Demographic Profile of the Respondents

Innovation and Coordination, Preservice Teacher Education, District Resource Unit. Planning and Management, Educational Technology, Experience, Curriculum Work Material Development and Evaluation, Administrative Branch, etc.) of the institute, so the calculated sample for the study becomes  $100^2$ . The information has been sought from the respondents either personally, or through e-mail or Google forms. The demographic profile of the respondents is presented in Table 1.

#### Data Analysis

It is quite evident from Table 2 that the Karl Pearson Coefficient of Correlation for the variables  $A_1$  and  $E_1$  is 0.004, which shows a positive correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 8.456, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting Training Need Analysis observation using method and

 $<sup>\</sup>frac{z^2 - p - q = N}{e^2(N-1) + z^2 - p - q}$ , where p = 0.02, q = 0.98, N = 215, e = 0.02, z value at 95% Confidence Level

### Table 2 Cross-tabulation

	Feedback forms have been collected from the trainees (							
		SA	А	N	D	SD	Statistics	
	SA	26.3%	57.9%	15.8%	-	-	$x^2 = 8.456$	
	A	33.3%	41.7%	25.0%	-	-		
	Ν	11.1%	33.3%	55.6%	-	-	R = 0.004	
	D	36.6%	36.7%	26.7%	-	Ι		
	SD	50.0%	16.7%	33.3%	-	-	df = 8	
	P	resentat	ions and	demons	trations	have be	en given by	
		~ .	e	ach part	icipant (	E <sub>2</sub> )	<b>a</b>	
		SA	A	N	D	SD	Statistics	
	SA	0.0%	21.1%	21.1%	15.8%	42.1%	$x^2 = 25.3$	
	A	8.3%	13.9%	25.0%	27.8%	25.0%		
	Ν	11.1%	22.2%	0.0%	44.4%	22.2%	R = -0.11	
I have conducted	D	0.0%	23.3%	13.3%	50.0%	13.3%		
the TNA (Training Need	SD	33.3%	16.7%	16.7%	0.0%	33.3%	df = 16	
Analysis) using	Pos	Post-training behaviour of the trainees has been observed						
Observation Method (A)		84	٨	() N	2 <sub>3</sub> )	8D	Statistics	
				10	D 06.20/	30	$r^2 = 16.00$	
	SA	0.0%	10.5%	26.3%	26.3%	36.8%	$x^2 = 16.02$	
	A	2.8%	2.8%	19.4%	38.9%	36.1%	D 0.016	
	N	0.0%	22.2%	55.6%	11.1%	11.1%	R = 0.016	
	D	3.3%	13.3%	13.3%	26.7%	43.3%		
	SD	0.0%	0.0%	16.7%	33.3%	50.0%	df = 16	
	The	teachin	g/learni	ng of tea after tra	cher/kie ining (E	is has bo ,)	een improved	
		SA	А	N	D	SD	Statistics	
	SA	-	-	31.6%	47.4%	21.1%	$x^2 = 5.78$	
	A	-	-	47.2%	38.9%	13.9%		
	N	-	-	55.6%	44.4%	0.0%	R = -0.069	
	D	_	-	50.0%	40.0%	10.0%		
	SD	-	-	16.7%	66.7%	16.7%	df = 8	

feedback collection from trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_1$  and  $E_2$  is -0.11 which shows a negative correlation. The calculated value of  $x^2$  for 16 degrees of freedom at 5% level of significance is 25.3, whereas the tabulated value is 26.296. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using observation method and demonstration of acquired skills by trainees.

The Karl Pearson Coefficient of Correlation for the variables A<sub>1</sub> and  $E_3$  is 0.016, which shows a positive correlation. Calculated value of  $x^2$  for 16 degrees of freedom at 5% level of significance is 16.02, whereas the tabulated value is 26.296. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using observation method and posttraining behaviour of trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_1$  and  $E_4$  is -0.069, which shows a negative correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 5.78, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using observation method and improvement in teaching/learning.

The Karl Pearson Coefficient of Correlation for the variables  $A_{2}$  and  $E_1$  is 0.151, which shows a positive correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 0.151, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using interview method and feedback collection from trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_2$  and  $E_2$  is -0.09 which shows a negative correlation. The calculated value of  $x^2$  for 16 degrees of freedom at 5% level of significance is 12.6, whereas the tabulated value is 26.296. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using interview method and demonstration of acquired skills by trainees.

The Karl Pearson Coefficient of Correlation for the variables  $A_2$  and  $E_3$  is -0.006, which shows a negative correlation. Calculated value of  $x^2$  for 16 degrees of freedom at 5% level of significance is 10.91, whereas the tabulated value is 26.296. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using interview method and post-training behaviour of trainees.

	-						
	Fe	edback fo	orms have	been col	lected fro	om the t	rainees (E <sub>1</sub> )
		SA	А	Ν	D	SD	Statistics
	SA	42.9%	28.6%	28.6%	_	_	$\chi^2 = 6.6$
	Α	41.7%	41.7%	16.7%	-	-	
	Ν	42.9%	28.6%	28.6%	_	_	R = 0.151
	D	26.7%	41.7%	31.7%	-	-	
	SD	0.0%	100.0%	0.0%	-	-	df = 8
	Pre	sentation	ns and der	nonstrati	ions have	been giv	ven by each
				participa	ant (E <sub>2</sub> )		····
		SA	А	N	D	SD	Statistics
	SA	0.0%	42.9%	14.3%	14.3%	28.6%	$x^2 = 12.6$
	A	4.2%	16.7%	12.5%	29.2%	37.5%	
	Ν	0.0%	14.3%	0.0%	57.1%	28.6%	R = -0.09
I have	D	8.3%	18.3%	21.7%	31.7%	20.0%	
the TNA	SD	0.0%	0.0%	50.0%	50.0%	0.0%	df = 16
•							
using	Post	-training	behaviou	r of the t	rainees h	as been o	observed (E <sub>3</sub> )
using Interview Method (A.)	Post	- <b>training</b> SA	behaviou A	r of the t N	rainees h	as been of SD	<b>observed (E<sub>3</sub>)</b> Statistics
using Interview Method (A <sub>2</sub> )	Post     SA	-training SA 0.0%	behaviou           A           14.3%	r of the t N 14.3%	<b>rainees h</b> D 42.9%	<b>as been</b> SD 28.6%	Statistics $x^2 = 10.91$
using Interview Method (A <sub>2</sub> )	Post     SA     A	-training SA 0.0% 0.0%	behaviou           A           14.3%           12.5%	r of the t N 14.3% 20.8%	D           42.9%           20.8%	as been of SD 28.6% 45.8%	Statistics $x^2 = 10.91$
using Interview Method (A <sub>2</sub> )	Post SA A N	SA           0.0%           0.0%	behaviou           A           14.3%           12.5%           14.3%	r of the t N 14.3% 20.8% 28.6%	rainees h           D           42.9%           20.8%           57.1%	as been of SD 28.6% 45.8% 0.0%	observed (E <sub>3</sub> )           Statistics           x <sup>2</sup> = 10.91           R = -0.006
using Interview Method (A <sub>2</sub> )	Post SA A D	SA           0.0%           0.0%           0.0%           3.3%	behaviou           A           14.3%           12.5%           14.3%           6.7%	r of the t N 14.3% 20.8% 28.6% 21.7%	rainees h           D           42.9%           20.8%           57.1%           28.3%	as been of SD 28.6% 45.8% 0.0% 40.0%	observed (E <sub>3</sub> )           Statistics           x <sup>2</sup> = 10.91           R = -0.006
using Interview Method (A <sub>2</sub> )	Post SA A D SD	SA           0.0%           0.0%           0.0%           0.0%           0.0%	behaviou           A           14.3%           12.5%           14.3%           6.7%           0.0%	r of the t N 14.3% 20.8% 28.6% 21.7% 50.0%	rainees h           D           42.9%           20.8%           57.1%           28.3%           50.0%	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0%	observed (E <sub>3</sub> )           Statistics           x <sup>2</sup> = 10.91           R = -0.006           df = 16
using Interview Method (A <sub>2</sub> )	Post SA A D SD Th	SA       0.0%       0.0%       0.0%       3.3%       0.0%	behaviou           A           14.3%           12.5%           14.3%           6.7%           0.0%           mg/learning	r of the t N 14.3% 20.8% 28.6% 21.7% 50.0% rg of teac	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0% has been	observed ( $E_3$ )         Statistics $x^2 = 10.91$ R = -0.006         df = 16         improved
using Interview Method (A <sub>2</sub> )	Post SA A N D SD Th	SA       0.0%       0.0%       0.0%       3.3%       0.0%	behaviou           A           14.3%           12.5%           14.3%           6.7%           0.0%           ng/learning	r of the t N 14.3% 20.8% 28.6% 21.7% 50.0% rg of teac fter train	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids hing (E <sub>4</sub> )	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0% has been	observed ( $E_3$ )         Statistics $x^2 = 10.91$ R = -0.006         df = 16         mimproved
using Interview Method (A <sub>2</sub> )	Post SA A N D SD Th	SA       0.0%       0.0%       0.0%       3.3%       0.0%       action       SA	behaviou           A           14.3%           12.5%           14.3%           6.7%           0.0%           ng/learning           A	r of the t N 14.3% 20.8% 28.6% 21.7% 50.0% rg of teac fter train N	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids ning (E <sub>4</sub> ) D	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0% has been SD	Statistics $x^2 = 10.91$ R = -0.006df = 16improvedStatistics
using Interview Method (A <sub>2</sub> )	Post SA A N D SD Th SA	SA       0.0%       0.0%       0.0%       3.3%       0.0%       e teaching       SA       -	behaviou A 14.3% 12.5% 14.3% 6.7% 0.0% bg/learnin a A -	r of the t N 14.3% 20.8% 28.6% 28.6% 21.7% 50.0% g of teac fter train N 42.9%	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids hing (E₄) D 57.1%	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0% has been SD 0.0%	<b>observed</b> ( $E_3$ )         Statistics $x^2 = 10.91$ R = -0.006         df = 16 <b>improved</b> Statistics $x^2 = 7.8$
using Interview Method (A <sub>2</sub> )	Post SA A N D SD Th SA A	-training       SA       0.0%       0.0%       3.3%       0.0%       e teaching       SA       -       -	behaviou A 14.3% 12.5% 14.3% 6.7% 0.0% ng/learnin a A - -	r of the t N 14.3% 20.8% 28.6% 21.7% 50.0% g of teac fter train N 42.9% 37.5%	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids hing (E <sub>4</sub> ) D 57.1% 45.8%	as been ( SD 28.6% 45.8% 0.0% 40.0% 0.0% has been SD 0.0% 16.7%	observed ( $E_3$ )         Statistics $x^2 = 10.91$ R = -0.006         df = 16         improved         Statistics $x^2 = 7.8$
using Interview Method (A <sub>2</sub> )	Post SA A N D SD Th SA A N	SA       0.0%       0.0%       0.0%       3.3%       0.0%       scalar       SA       -       -       -       -       -	behaviou A 14.3% 12.5% 14.3% 6.7% 0.0% mg/learnin a A - - -	r of the t N 14.3% 20.8% 28.6% 28.6% 21.7% 50.0% g of teac fter train N 42.9% 37.5% 71.4%	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids ing (E <sub>4</sub> ) D 57.1% 45.8% 28.6%	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0% has been SD 0.0% 16.7% 0.0%	<b>observed</b> ( $E_3$ )         Statistics $x^2 = 10.91$ R = -0.006         df = 16 <b>improved</b> Statistics $x^2 = 7.8$ R = 0.014
using Interview Method (A <sub>2</sub> )	Post SA A N D SD Th SA A N D	-training SA 0.0% 0.0% 3.3% 0.0% e teachin SA - - - -	behaviou A 14.3% 12.5% 14.3% 6.7% 0.0% bg/learnin a A - - - -	r of the t N 14.3% 20.8% 28.6% 28.6% 21.7% 50.0% g of teac fter train N 42.9% 37.5% 71.4% 45.0%	rainees h D 42.9% 20.8% 57.1% 28.3% 50.0% her/kids ing (E <sub>4</sub> ) D 57.1% 45.8% 28.6% 40.0%	as been of SD 28.6% 45.8% 0.0% 40.0% 0.0% 0.0% has been SD 0.0% 16.7% 0.0% 15.0%	Statistics $x^2 = 10.91$ $R = -0.006$ df = 16 <b>improved</b> Statistics $x^2 = 7.8$ $R = 0.014$

## Table 3 Cross-tabulation

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# Table 4 Cross-tabulation

I have conducted	Fe	edback f	orms hav	e been c	ollected	from the	trainees ( $\mathbf{E}_1$ )
the TNA using		SA	А	N	D	SD	Statistics
Method $(A_3)$	SA	40.9%	36.4%	22.7%	-	-	$x^2 = 4.84$
	А	22.0%	41.5%	36.6%	-	-	
	Ν	37.8%	43.2%	18.9%	_	-	R = -0.039
	D	-	_	-	-	-	
	SD	-	_	-	-	-	df = 4
	P	resentat	ions and e	demons ach part	trations icipant (	have be [E <sub>2</sub> ]	en given by
		SA	А	N	D	SD	Statistics
	SA	0.0%	36.4%	13.6%	22.7%	27.3%	$x^2 = 15.16$
	А	12.2%	7.3%	17.1%	43.9%	19.5%	
	Ν	2.7%	21.6%	21.6%	24.3%	29.7%	R = 0.047
	D	_	_	-	_	-	
	SD	_	-	-	_	-	df = 8
	Pos	t-trainin	g behavio	our of the	trainees	has beer	$1$ observed ( $\mathbf{E}_3$ )
	Pos	<b>t-trainin</b> SA	<b>g behavio</b> A	our of the	trainees	has beer	<b>observed (E<sub>3</sub>)</b> Statistics
	Pos SA	t-trainin SA 0.0%	<b>g behavio</b> A 9.1%	N 31.8%	trainces           D           31.8%	has been           SD           27.3%	<b>observed (E_3)</b> Statistics $x^2 = 14.33$
	Pos SA A	t-trainin SA 0.0% 2.4%	g behavio A 9.1% 14.6%	N         31.8%           26.8%	trainees           D           31.8%           14.6%	has been           SD           27.3%           41.5%	Statistics $x^2 = 14.33$
	Pos SA A N	t-trainin SA 0.0% 2.4% 2.7%	g behavio A 9.1% 14.6% 2.7%	N           31.8%           26.8%           10.8%	trainees         D         31.8%         14.6%         45.9%	has been           SD           27.3%           41.5%           37.8%	<b>observed (E<sub>3</sub>)</b> Statistics $x^2 = 14.33$ R = 0.142
	Pos SA A N D	t-trainin, SA 0.0% 2.4% 2.7% -	g behavio A 9.1% 14.6% 2.7% -	N         31.8%           26.8%         10.8%           -         -	trainees         D         31.8%         14.6%         45.9%         -	has been           SD           27.3%           41.5%           37.8%	a observed ( $E_3$ )         Statistics $x^2 = 14.33$ R = 0.142
	Pos SA A D SD	t-trainin, SA 0.0% 2.4% 2.7% - -	<b>g behavio</b> A 9.1% 14.6% 2.7% - -	N         31.8%           26.8%         10.8%           -         -           -         -	trainees         D         31.8%         14.6%         45.9%         -         -         -	has been           SD           27.3%           41.5%           37.8%           -           -	<b>b observed (E<sub>3</sub>)</b> Statistics x <sup>2</sup> = 14.33 R = 0.142 df = 8
	Pos SA A D SD The	t-trainin, SA 0.0% 2.4% 2.7% - - teachin	g behavio A 9.1% 14.6% 2.7% - - g/learni	N         31.8%           26.8%         10.8%           -	trainees D 31.8% 14.6% 45.9% cmather/ki ining (E	has been         SD         27.3%         41.5%         37.8%         -         ds has b         4,)	a observed ( $E_3$ )         Statistics $x^2 = 14.33$ R = 0.142         df = 8         een improved
	Pos SA A D SD The	t-trainin, SA 0.0% 2.4% 2.7% - - teachin SA	g behavio A 9.1% 14.6% 2.7% - - g/learni A	N 31.8% 26.8% 10.8% - - ng of tea after tra N	trainees D 31.8% 14.6% 45.9% cmacher/ki ining (E D	has been         SD         27.3%         41.5%         37.8%         -         ds has b         ₄)         SD	<b>observed (E3)</b> Statistics $x^2 = 14.33$ $R = 0.142$ $df = 8$ <b>een improved</b> Statistics
	Pos SA A N D SD The SA	t-trainin, SA 0.0% 2.4% 2.7% - - teachin SA -	g behavio A 9.1% 14.6% 2.7% - - g/learni A -	N 31.8% 26.8% 10.8% - - ng of tea after tra N 40.9%	trainees         D         31.8%         14.6%         45.9%         -         acher/kit         ining (E         D         40.9%	b has been SD 27.3% 41.5% 37.8% - - ds has b ₄) SD 18.2%	a observed ( $E_3$ )         Statistics $x^2 = 14.33$ R = 0.142         df = 8         een improved         Statistics $x^2 = 4.42$
	Pos SA A D SD The SA A	t-trainin, SA 0.0% 2.4% 2.7% - - teachin SA - -	g behavio A 9.1% 14.6% 2.7% - - - g/learni A - -	N 31.8% 26.8% 10.8% - - mg of tea after tra N 40.9% 51.2%	trainees         D         31.8%         14.6%         45.9%         -         -         acher/ki         ining (E         D         40.9%         43.9%	has been         SD         27.3%         41.5%         37.8%         -         ds has b         4)         SD         18.2%         4.9%	a observed ( $E_3$ )         Statistics $x^2 = 14.33$ $R = 0.142$ df = 8         een improved         Statistics $x^2 = 4.42$
	Pos SA A N D SD The SA A N	t-trainin, SA 0.0% 2.4% 2.7% - - teachin SA - - -	g behavio A 9.1% 14.6% 2.7% - - - g/learni A - - - -	N 31.8% 26.8% 10.8% - - ng of tea after tra N 40.9% 51.2% 37.8%	trainees         D         31.8%         14.6%         45.9%         -         acher/kii         aining (E         D         40.9%         43.9%         43.2%	<ul> <li>has been</li> <li>SD</li> <li>27.3%</li> <li>41.5%</li> <li>37.8%</li> <li>-</li> <li>-</li> <li>ds has b</li> <li>4)</li> <li>SD</li> <li>18.2%</li> <li>4.9%</li> <li>18.9%</li> </ul>	a observed ( $E_3$ )         Statistics $x^2 = 14.33$ $R = 0.142$ df = 8         een improved         Statistics $x^2 = 4.42$ $R = 0.051$
	Pos SA A N D SD The SA A N D	t-trainin, SA 0.0% 2.4% 2.7% - - teachin SA - - - - -	g behavio A 9.1% 14.6% 2.7% - - - g/learni A - - - - - - - - -	N           31.8%           26.8%           10.8%           -           -           ng of tea           after tra           N           40.9%           51.2%           37.8%	trainees       D       31.8%       14.6%       45.9%       -       -       acher/ki       ining (E       D       40.9%       43.9%       43.2%       -	has been         SD         27.3%         41.5%         37.8%         -         ds has b         4)         SD         18.2%         4.9%         18.9%         -	a observed ( $E_3$ )         Statistics $x^2 = 14.33$ $R = 0.142$ df = 8         een improved         Statistics $x^2 = 4.42$ $R = 0.051$

Karl Pearson Coefficient The of Correlation for the variables  $A_{2}$  and  $E_{4}$  is 0.014, which shows a positive correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 7.8, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using interview method and improvement in teaching/learning.

The Karl Pearson Coefficient of Correlation for the variables  $A_{2}$  and  $E_1$  is -0.039, which shows a negative correlation. The calculated value of  $x^2$  for 4 degrees of freedom at 5% level of significance is 4.84, whereas the tabulated value is 9.488. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted or it can be concluded that there is no significant relationship between conducting TNA using discussion method and feedback collection from trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_3$  and  $E_2$  is 0.047, which shows a positive correlation. Calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 15.16, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore, null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using discussion method and demonstration of acquired skills by trainees.

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The Karl Pearson Coefficient of Correlation for the variables A<sub>2</sub> and  $E_3$  is 0.142, which shows a positive correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 14.33, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using discussion method and post-training behaviour of trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_{2}$  and  $E_4$  is 0.051, which shows a positive correlation. Calculated value of  $x^2$ for 4 degrees of freedom at 5% level of significance is 4.42, whereas the tabulated value is 9.488. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using discussion method and improvement in teaching/learning.

The Karl Pearson Coefficient of Correlation for the variables  $A_4$  and  $E_1$  is 0.156, which shows a positive correlation (Table 5). The calculated value of  $x^2$  for 4 degrees of freedom at 5% level of significance is 4.09, whereas the tabulated value is 9.488. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using questionnaire method and feedback collection from trainees.

	Fee	dback fo	orms hav	ve been o	ollected	from th	e trainees ( $\mathbf{E}_1$ )	
		SA	А	Ν	D	SD	Statistics	
	SA	_	_	_	-	-	$x^2 = 4.09$	
	А	—	-	_	-	-		
	Ν	37.0%	44.4%	18.5%	-	_	R = 0.156	
	D	33.3%	46.7%	20.0%	-	-		
	SD	27.9%	34.9%	37.2%	-	-	df = 4	
	P	resentat	ions and	l demon	strations	s have be (E)	en given by	
		SA	A	N	D	( <b>2</b> ₂) SD	Statistics	
	SA	_	_	_	_	_	$x^2 = 7.31$	
	A	_	_	_	_	_		
	N	0.0%	22.2%	18.5%	22.2%	37.0%	R = -0.51	
	D	10.0%	23.3%	16.7%	30.0%	20.0%		
I have conducted	SD	7.0%	14.0%	18.6%	39.5%	20.9%	df = 8	
Questionnaire	Pos	t-trainiı	ng behav	iour of t	the trainees has been observed (E)			
Method (A <sub>4</sub> )		SA	А	N	D	SD	Statistics	
	SA	_	_	_	_	_	$x^2 = 5.73$	
	Α	_	_	_	_	_		
	N	0.0%	3.7%	18.5%	29.6%	48.1%	R = -0.098	
	D	3.3%	13.3%	23.3%	36.7%	23.3%		
	SD	2.3%	9.3%	23.3%	25.6%	39.5%	df = 8	
	The	e teachir	ng/learn	ing of te after tr	acher/ki aining (E	ids has b	een improved	
		SA	А	N	D	SD	Statistics	
	SA	_	_	_	_	_	$x^2 = 5.01$	
	А	-	-	-	-	-		
	N	-	_	40.7%	51.9%	7.4%	R = 0.70	
	D	-	_	46.7%	46.7%	6.7%		
	SD	_	-	44.2%	34.9%	20.9%	df = 4	

Table 5 Cross-tabulation

The Karl Pearson Coefficient of Correlation for the variables  $A_4$  and  $E_{2}$  is -0.051, which shows a negative correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 7.31, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted or it can be concluded that there is no significant relationship between conducting TNA using questionnaire method demonstration of and acquired skills by trainees.

The Karl Pearson Coefficient of Correlation for the variables  $A_4$  and  $E_3$  is -0.098, which shows a negative correlation. Calculated value of  $x^2$ for 8 degrees of freedom at 5% level of significance is 5.73, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA using questionnaire method and post-training behaviour of trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_{4}$  and  $E_4$  is 0.070, which shows a positive correlation. The calculated value of  $x^2$  for 4 degrees of freedom at 5% level of significance is 5.01, whereas the tabulated value is 9.488. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between conducting TNA

using questionnaire method and improvement in teaching/learning.

The Karl Pearson Coefficient of Correlation for the variables  $A_5$  and  $E_1$  is -0.131, which shows a negative correlation (Table 6). The calculated value of  $x^2$  for 6 degrees of freedom at 5% level of significance is 5.4, the tabulated value whereas is 12.592. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between analysing data through MS Excel and feedback collection from trainees. Coefficient of The Karl Pearson Correlation for the variables  $A_5$  and  $E_{0}$  is -0.109, which shows a negative correlation. The calculated value of  $x^2$  for 12 degrees of freedom at 5% level of significance is 4.66, whereas the tabulated value is 21.02. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between analysing data through MS Excel and demonstration of acquired skills by trainees.

The Karl Pearson Coefficient of Correlation for the variables  $A_5$  and  $E_3$  is 0.049, which shows a positive correlation. Calculated value of  $x^2$ for 12 degrees of freedom at 5% level of significance is 9.23, whereas the tabulated value is 21.026. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant

	Fee	dback for	rms have	e been col	lected fr	om the t	rainees ( $\mathbf{E}_1$ )	
		SA	А	Ν	D	SD	Statistics	
	SA	_	-	-	-	-	$x^2 = 5.4$	
	А	18.2%	45.5%	36.4%	-	-		
	Ν	19.0%	57.1%	23.8%	-	-	R = -0.131	
	D	38.9%	33.3%	27.8%	-	-		
	SD	35.7%	42.9%	21.4%	-	_	df = 6	
	Pres	entation	s and de	monstrat participa	ions have ant (E <sub>2</sub> )	e been gi	ven by each	
		SA	А	Ν	D	SD	Statistics	
	SA	_	-	_	_	_	$x^2 = 4.66$	
	А	0.0%	18.2%	18.2%	36.4%	27.3%		
	Ν	4.8%	19.0%	9.5%	28.6%	38.1%	R = -0.109	
I have	D	7.4%	18.5%	22.2%	31.5%	20.4%		
analysed the	SD	7.1%	21.4%	14.3%	35.7%	21.4%	df = 12	
collected data using MS Excel	Pos	Post-training behaviour of the trainees has been observed (E.)						
( <b>A</b> <sub>5</sub> )		SA	А	N	D	SD	Statistics	
	SA	_	_	_	-	_	$x^2 = 9.23$	
	A	0.0%	18.2%	36.4%	27.3%	18.2%		
	N	0.0%	4.8%	19.0%	28.6%	47.6%	R = 0.049	
	D	1.9%	9.3%	24.1%	27.8%	37.0%		
	SD	7.1%	7.1%	7.1%	42.9%	35.7%	df = 12	
	The	teachin	g/learnir	ng of teac after train	her/kids: hing (E₄)	has bee	n improved	
		SA	А	N	D	SD	Statistics	
	SA	_	_	_	-	_	$x^2 = 6.35$	
	А	_	_	36.4%	54.5%	9.1%		
	N	_	_	28.6%	61.9%	9.5%	R = -0.086	
	D	_	_	50.0%	33.3%	16.7%		
	25			E0 00/	40.0%	7 10/	df = 6	

Table 6 Cross-tabulation

relationship between analysing data through MS Excel and post-training behaviour of trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_5$  and  $E_4$  is -0.086, which shows a negative correlation. The calculated value of  $x^2$  for 6 degrees of freedom at 5% level of significance is 6.35, whereas the tabulated value is 12.592. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between analysing data through MS Excel and improvement in teaching/learning.

The Karl Pearson Coefficient of Correlation for the variables  $A_6$  and E<sub>1</sub> is 0.003, which shows a positive correlation (Table 7). The calculated value of  $x^2$  for 4 degrees of freedom at 5% level of significance is 9.21, whereas the tabulated value is 9.488. Since the calculated value is less than the tabulated one, therefore null hypothesis is accepted or it can be concluded that there is no significant relationship between analysing data through SPSS and feedback collection from trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_6$  and  $E_2$  is 0.05, which shows a positive correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 3.79, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between analysing data

through SPSS and demonstration of acquired skills by trainees.

The Karl Pearson Coefficient of Correlation for the variables  $A_6$  and  $E_3$  is -0.31, which shows a negative correlation. The calculated value of  $x^2$  for 8 degrees of freedom at 5% level of significance is 6.66, whereas the tabulated value is 15.507. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted or it can be concluded that there is no significant relationship between analysing data through SPSS and post-training behaviour of trainees. The Karl Pearson Coefficient of Correlation for the variables  $A_6$  and  $E_4$  is 0.071, which shows a positive correlation. The calculated value of  $x^2$  for 4 degrees of freedom at 5% level of significance is 4.59, whereas the tabulated value is 9.488. Since the calculated value is lesser than the tabulated one, therefore null hypothesis is accepted, or it can be concluded that there is no significant relationship between analysing data through SPSS and improvement in teaching/learning.

#### **CONCLUSIONS AND RECOMMENDATIONS**

The quality of education is abysmal and it is the onus of the government and the various bodies which plan the whole education system from school level to higher education. From the present study it has been identified that most of the faculty members who use Observation Method (55%), Interview Method (31%), Discussion Method (63%) or Questionnaire

### Table 7 Cross-tabulation

	Feedback forms have been collected from the trainees $(\mathbf{E}_1)$							
		SA	А	N	D	SD	Statistics	
	SA	_	_	-	_	-	$x^2 = 9.21$	
	A	_	_	-	_	-		
	N	38.5%	28.2%	33.3%	_	-	R = 0.003	
	D	33.3%	38.5%	28.2%	-	-		
	SD	18.2%	68.2%	13.6%	-	-	df = 4	
	Pre	esentatio	ons and o ea	demonst ch partic	rations h ipant (E	ave beer <sub>2</sub> )	n given by	
		SA	А	N	D	SD	Statistics	
	SA	_	_	-	-	-	$x^2 = 3.79$	
	А	-	_	-	-	-		
	N	5.1%	20.5%	20.5%	30.8%	23.1%	R = 0.05	
	D	7.7%	15.4%	17.9%	38.5%	20.5%		
I have analysed	SD	6.0%	19.0%	18.0%	32.0%	25.0%	df = 8	
the collected date	Post-training behaviour of the trainees has been ob							
the collected data using SPSS $(A_6)$	Post	training	; behavio	our of the (E <sub>3</sub>	e trainee 3)	s has bee	en observed	
the collected data using SPSS (A <sub>6</sub> )	Post	• <b>training</b> SA	<b>behavio</b> A	our of the (E	e trainee 3) D	s has been specific s	en observed Statistics	
the collected data using SPSS (A <sub>6</sub> )	Post-	<b>training</b> SA -	s <b>behavic</b> A -	our of the (E	b trainee	<b>s has bee</b> SD -	Statistics $x^2 = 6.66$	
the collected data using SPSS (A <sub>6</sub> )	Post- SA A	SA - -	<b>behavic</b> A - -	our of the (E	<b>trainee</b> 3) D -	s has bee SD - -	Statistics $x^2 = 6.66$	
the collected data using SPSS (A <sub>6</sub> )	Post- SA A N	<b>training</b> SA	A - 2.6%	Dur of the (E - 23.1%	<pre>trainee</pre>	s has bee SD - - 41.0%	Statistics $x^2 = 6.66$ R = -0.31	
the collected data using SPSS (A <sub>6</sub> )	Post- SA A N D	<b>training</b> SA 5.1% 0.0%	A - - 2.6% 12.8%	Pur of the (E)           N           -           23.1%           23.1%	<pre>b trainee b trainee b</pre>	<b>s has bee</b> SD - - 41.0% 33.3%	Statistics $x^2 = 6.66$ R = -0.31	
the collected data using SPSS (A <sub>6</sub> )	Post SA A N D SD	<b>training</b> SA 5.1% 0.0% 0.0%	A - - 2.6% 12.8% 13.6%	Pur of the (E)           N           -           23.1%           23.1%           18.2%	<pre>b trainee c trainee c</pre>	<b>s has bee</b> SD - 41.0% 33.3% 36.4%	en observed Statistics $x^2 = 6.66$ R = -0.31 df = 8	
the collected data using SPSS (A <sub>6</sub> )	Post- SA A D SD	training           SA           -           -           5.1%           0.0%           0.0%           The tead	A - - 2.6% 12.8% 13.6% ching/le impro	N         -         23.1%         18.2%         arning of         ved after	<pre>c trainee c trainee c trainee c trainee c trainee c trainee c training c</pre>	SD - - 41.0% 33.3% 36.4% c/kids ha g (E <sub>4</sub> )	Statistics $x^2 = 6.66$ R = -0.31 df = 8 <b>s been</b>	
the collected data using SPSS (A <sub>6</sub> )	Post SA A D SD	<b>training</b> SA 5.1% 0.0% 0.0% <b>The tead</b> SA	A - 2.6% 12.8% 13.6% ching/le impro A	Pur of the (E)           N           -           23.1%           23.1%           18.2%           arning of ved after           N	<ul> <li>trainee</li> <li>D</li> <li>-</li> <li>28.2%</li> <li>30.8%</li> <li>31.8%</li> <li>f teacher</li> <li>training</li> <li>D</li> </ul>	<pre>Shas bee SD 41.0% 33.3% 36.4% 36.4% s/kids ha g (E<sub>4</sub>) SD</pre>	en observed Statistics $x^2 = 6.66$ R = -0.31 df = 8 <b>s been</b> Statistics	
the collected data using SPSS (A <sub>6</sub> )	Post- SA A D SD SA	training SA 5.1% 0.0% 0.0% The tead SA	A - 2.6% 12.8% 13.6% ching/le impro A -	Pur of the (E)           N           -           23.1%           23.1%           18.2%           arning of ved after           N           -	<pre>c trainee c trainee D D - 28.2% 30.8% 31.8% f teacher c trainin; D</pre>	SD - - 41.0% 33.3% 36.4% c/kids ha g (E₄) SD -	En observed Statistics $x^2 = 6.66$ R = -0.31 df = 8 Statistics $x^2 = 4.59$	
the collected data using SPSS (A <sub>6</sub> )	Post SA A N D SD SD SA A	training         SA         -         5.1%         0.0%         0.0%         The tead         SA         -         -         -         -         -         -         -         0.0%         The tead         SA         -         -         -	A - 2.6% 12.8% 13.6% ching/le impro A - -	N       -         -       -         23.1%       23.1%         18.2%       arning of ved after         N       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -         -       -	<pre>c trainee c trainee c trainee c trainee c traine c trainin c</pre>	SD - - 41.0% 33.3% 36.4% c/kids ha g (E₄) SD - - -	<b>EXAMPLE 1 Constraints Co</b>	
the collected data using SPSS (A <sub>6</sub> )	Post- SA A D SD SD SA A N	training         SA         -         5.1%         0.0%         0.0%         The tead         SA         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	A - 2.6% 12.8% 13.6% ching/le impro A - - -	N         -         23.1%         23.1%         18.2%         arning of         ved after         N         -         46.2%	<pre>c trainee c trainee c trainee c trainee c traine c training c</pre>	SD - - 41.0% 33.3% 36.4% c/kids ha g (E₄) SD - - 7.7%	<b>EXAMPLE 1</b> Statistics $x^2 = 6.66$ R = -0.31 df = 8 <b>S been</b> Statistics $x^2 = 4.59$ R = 0.071	
the collected data using SPSS (A <sub>6</sub> )	Post SA A N D SD SD SA A N D	training         SA         -         -         5.1%         0.0%         0.0%         The tead         SA         -	A - - 2.6% 12.8% 13.6% Ching/le impro A - - - - - -	N       -         -       -         23.1%       23.1%         18.2%       arning of ved after         N       -         -       -         46.2%       38.5%	<pre>trainee trainee D - 28.2% 30.8% 31.8% teacher trainin D 46.2% 48.7%</pre>	<pre>S has bee SD 41.0% 33.3% 36.4% (kids ha g (E₄) SD 7.7% 12.8%</pre>	<b>EXAMPLE 1 Statistics</b> $x^2 = 6.66$ R = -0.31 df = 8 <b>Statistics</b> $x^2 = 4.59$ R = 0.071	



Figure 2. Correlation between Training Need Analysis and Evaluation of Training Programme

Method (0%) for Training Need Analysis take feedback of the training programme from the participants, but do not measure the post-training behaviour of the participants. Further, a significant change has not been identified in the teaching and learning behaviour of the faculties and students. It is observed that there is a significant relationship between approaches to Training Need Analysis (Observation, Interview, Discussion and Questionnaire) and evaluation of the training programme (Figure 2). There is a need to apply quantitative techniques to capture data from the teaching fraternity about what sort of training needs is required (Bryman and Cramer, 1994; Allison, 2002). Oualitative methods of data analysis-Observation, Discussion or Interview have some drawbacks in the sense that there might have been errors in collecting the information and

further its interpretation, whereas Ouestionnaire method records data in a sequential manner and is easy to analyse, which provides deep insights into the data patterns. For the analysis of the collected data using any of the method, 11per cent of the faculty members apply MS Excel for synthesising information, whereas nobody applies SPSS or any other software package. It is quite evident from the study that very few faculty members use ICT tools like MS Excel/ SPSS for data analysis which shows a significant relationship between techniques of Training Need Analysis (MS Excel and SPSS) and evaluation of the training programme. There is a need to put ICT tools into teaching/ learning practices which offers the coherent analysis of information and easy elucidation (Tondeur Van Braak and Valcke, 2007; Wastiau et al., 2013; Drent and Meelissen, 2008).

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