

Perceived Impact of Centre for Advanced Faculty Training Programmes and Implicative Strategies

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ABSTRACT

This paper captures the perceptions of farm scientists towards impact of 'Centre for Advance Faculty Training' programmes. The purpose was to recommend strategies for enhancing training impact of CAFT programmes. Concurrent evaluation was done through assessing perceived effectiveness and knowledge and skill gains. Ex-post-facto assessment was approached through capturing perception of respondents towards training transfer in a system's perspectives. Participants (271) of CAFT programmes organized during 2007-08 to 2009-10, their peer group and deputing authorities (129) and participants (34) of on-going programmes (2) were the respondents. Data were collected through three different instruments and analyzed through descriptive statistics. Respondents had favourable opinion towards training design and delivery of CAFT programmers. Transfer outcomes revealed the effectiveness and positive impact of CAFT programmes. Results of concurrent evaluation and opinion of peer group and deputing authorities also confirmed these results. Training preferences of respondents were delineated. Factors influencing training transfer were identified and strategies to enhance training impact were recommended. The empirical model of the study contributes to training literature. Recommendations of study have direct implications on enhancing competency of agricultural faculty and thereby quality of agricultural education.

Key words: Effectiveness; Training transfer; CAFT programmes; Agriculture; Faculty; Strategies;

Agricultural education in India is coordinated by Indian Council of Agricultural Research (ICAR)-Agricultural University system (Tamboli and Nene, 2011). It comprises State Agricultural Universities (SAUs), Deemed-to-be universities (DUs), Central Agricultural University (CAU) and Central Universities (CUs) (Joshi, 2011). Manpower is a critical factor of quality assessment of SAUs (Chella et al., 2007). Major problem surmounting SAUs are academic inbreeding and isolation from other universities and international organizations (Rasheed & Anne 2008). On the other hand, financial support for agricultural education does not commensurate with expected extent. Hence, there is a need for adequate allocation of resources for capacity building of agricultural faculty (Joshi, 2011). Essentially, capacity development of faculty needs intent efforts (Tamboli and Nene, 2011).

To enhance competency of agricultural faculty, ICAR had set-up Centres for Advanced Studies (CAS)

with United Nations Development Programme (UNDP) support in 1971. These centres encouraged research collaboration between scientists across institutions and accelerated attainment of international standards in research and education (Venkattakumar and Sontakki, 2012). Performance of these centres was reviewed in 1999 and 2008. Based on the recommendations of such reviews, during XI plan period (2007-12), these centres were restructured as CAFT centres with adequate emphasis on training agricultural faculty. These centres organize 21-day programmes in cutting-edge areas. A brief profile of CAFT scheme is given in Table 1. It reveals the importance given by ICAR to CAFT programmes. Such importance signifies the need to assess the impact of CAFT programmes.

Level (reaction, learning, behaviour, results) of training impact is decided by training objectives (Kirkpatrick, 1959). Reaction is opinion of trainees as response to training module. Learning represents gain

Table 1. Profile of CAFT scheme (XI plan period)

Profile indicators	Particulars
CAFT centres	31
Disciplines covered	26
Programmes organized	203
Programmes organized per centre	6
Programmes organized per year	40
Faculty trained	3402
Faculty trained per centre	110
Faculty trained per year	680
Budget allocated (Lakh Rs.)	1099
Budget allocated per centre (Lakh Rs.)	35
Budget allocated per year (Lakh Rs.)	220

(Venkattakumar and Sontakki, 2012)

in knowledge, skill and change in attitude. Improvement in on-the- job performance of employees is behavioral measure, while utility in terms of output and outcome is result measure (Arthur *et al.* 2003). Effectiveness addresses reaction and learning levels and training transfer satisfies learning, behaviour and results levels.

‘Training transfer’ is application of knowledge, skill and attitude (KSAs) acquired during training programme back at job situation by trainees. Often, training programmes fail to inculcate ‘training transfer’ (Subedi, 2004). Training investments continue to yield deficit results, making ‘training transfer’ a core issue (Cheng and Ho, 2001; Yamnill and McLean, 2001). There are increasing expectations from trainers to evaluate training (Warr *et al.*, 1999), demonstrate link between training and organizational outcomes (Church and Waclawski, 2001) and justify investment in training (Salas and Cannon-Bowers, 2001). Often, less importance is given for training evaluation than planning and implementing training programmes (Rajeev *et al.*, 2009).

Training transfer generally is approached as a system. Holton *et al* (2000) viewed training transfer as a system of learner characteristics, training design, organizational climate and organizational results. The integrated theory of training motivation (Colquitt *et al.*, 2000) included trainees’ characteristics, situational variables and learning outcome domains to explain training transfer. Goldstein and Ford (2002) suggested training design, trainees’ characteristics, learning outcomes, work characteristics and transfer outcomes as domains of training transfer system. Social context,

individual factors, transfer process and outcomes were the domains suggested by Chibaru *et al* (2010). Pham *et al* (2010) proposed motivational perspectives, transfer strategies and transfer effects. Though, many models were proposed by researchers to explain training transfer, which of Holton *et al* (2000) is comprehensive.

Keeping in view the scenario of CAFT programmes and literature on training and training impact, a study was conducted by National Academy of Agricultural Research Management (NAARM) with the following objectives: to assess effectiveness and training transfer of CAFT programmes, to capture perception of peer group and deputing authorities towards performance of CAFT participants and to suggest strategies to enhance the impact of CAFT programmes

METHODOLOGY

The study was conducted during June-October 2012. The design had both ex-post-facto assessment (learning, behaviour and result levels) and concurrent evaluation (reaction and learning levels). Participants of completed CAFT programmes, their peer group, deputing authorities and participants of on-going CAFT programmes were respondents.

Participants of ex-post-facto assessment were selected through convenient sampling i.e. participants of CAFT programmes during 2007-08 to 2009-10 who all responded for survey (271- 15% of the population) were respondents. Participants of the concurrent evaluation were selected through saturated sampling i.e. all participants (34) of on-going programmes (2) of August 2012 were respondents. Peer group and deputing authorities of CAFT participants of six selected SAUs/ ICAR institutes were respondents (129) for assessing the performance of CAFT participants back at host-institutions (behaviour and result levels).

To capture training transfer, four domains such as self-attributes of participants (1), training design and delivery (2), organizational climate (3) and transfer outcomes (4) (as suggested by Holton *et al* (2000) were selected. Twenty six variables were identified for first three domains based on review of literature and earlier experience (Venkattakumar *et al.*, 2012). Fourth domain was considered as a single variable. Perceived opinion of participants towards these 27

variables was captured by 63 statements. Instruments to assess training transfer of CAFT programmes through ex-post-facto mode (mailed questionnaire-both postal and on-line), assess effectiveness of CAFT programmes through concurrent evaluation (distributed questionnaire) and assess performance of CAFT participants by peer group and deputing authorities (mailed/ distributed questionnaire) were developed and utilized for data collection. The collected data were analyzed by frequency distribution, percentage, average, linear

correlation and paired-t test. After analysis, results were presented at a review workshop during September 10-11, 2012 at NAARM, Hyderabad. Recommendations to enhance impact of CAFT programmes were suggested based on the study results and workshop deliberations.

RESULTS AND DISCUSSION

Response towards training transfer system:
 Respondents had favourable perceived-opinion towards

Table 2. Opinion towards training transfer system (N=271)

Component	Variables	Average opinion score#	Correlation coefficient (r)
<i>Self-attributes</i>			
Before training	Self-efficacy	8.5	0.3206 *
	Organizational commitment	9.0	0.3874 *
During training	Perceived utility	8.0	0.3718 *
	Cognitive ability	9.0	0.5226 **
	Conscientiousness	9.0	0.4161 *
	Goal orientation	8.5	0.2894 NS
After training	Motivation to transfer	9.0	0.2266 NS
	Locus of control	8.5	0.3743 *
	Personal capacity to transfer	7.0	0.3370 *
	Overall	9.0	0.4312 *
<i>Training design and delivery</i>			
Before training	Training needs assessment	8.0	0.343 *
	Content validity	8.7	0.424 *
During training	Active learning	8.7	0.312 *
	Varied practice	8.5	0.301 *
	Technological tools	8.5	-0.156 NS
After training	Training evaluation	8.0	0.109 NS
	Overall	8.4	0.367 *
<i>Organizational climate</i>			
Before training	General work environment	8.0	0.3435 *
	Peer support	8.5	0.3525 *
	Supervisor support	8.5	0.426 *
	Strategic link	8.0	0.425 *
After training	Accountability	8.0	0.4737 **
	Positive personal outcomes	7.5	0.5761 **
	Supervisor sanctions	3.0	-0.002 NS
	Task constraints	3.5	-0.045 NS
	Performance coaching	6.5	0.359 *
	Resistance to change	4.0	0.014 NS
	Job autonomy	7.0	0.5935 **
	Overall	7.6	0.5733 **
	Transfer outcomes	7.2	-

(#- 10-point scale ranges from 10-strongly agree to 1-strongly disagree;
 **- Significance at 1 % probability; *-Significance at 5 % probability)

all selected variables of 'self-attributes' (Table 2) except locus of control. Self-efficacy (self-judgment of trainees about competency to perform), organizational commitment (interest of trainees to apply new knowledge at work place for better performance), perceived utility (perceived-values of trainees towards training utility), conscientiousness (meticulousness exhibited by trainees towards training content), locus of control (expectancy that organizational outcomes are controlled by individuals' own actions or by other forces), personal capacity to transfer (extent to which individual trainees have time, energy and mental space towards training transfer) had significant relationship with transfer outcomes ($p < 0.05$). Relationship between cognitive ability (abilities applied by trainees to imbibe and comprehend training content) and transfer outcomes (improvement in knowledge, skills and attitude and resultant training-induced job performance of participants, peer group and in-turn, organizational performance) was highly significant ($p < 0.01$). 'Self-attributes' as a domain had significant relationship ($p < 0.05$) with transfer outcomes too, implying importance of attributes to be applied by trainees before, during and after training.

Respondents had favourable perceived-opinion towards all variables of training design and delivery and thus agreed towards the effectiveness of CAFT programmes (Table 2). Training needs assessment, content validity (training content reflecting organizational needs), active learning (making trainees involved in training interventions by careful designing) and varied practice (training through a variety of methods) had significant relationship ($p < 0.05$) with transfer outcomes. Training design and delivery as a domain too had significant relationship ($p < 0.05$) with transfer outcomes, implying its role on facilitating participants towards training transfer.

Perceived-opinion of respondents towards variables of 'organizational climate' such as task constraints, performance coaching, resistance to change and job autonomy was comparatively less favourable and hence towards this domain as a whole (Table 2). General work environment (characteristics of work environment that influence preparation, participation in training interventions and training transfer), peer support (extent to which peer group extend support for participation in training and on the job training transfer),

supervisor support (extent to which supervisors support participation in training and application of KSAs acquired), strategic link (match between learning outcomes and departmental goals) and task constraints (perceived stumbling blocks at work place that hinder training transfer) had significant relationship ($p < 0.05$) with transfer outcomes. However, accountability (degree to which trainees are held responsible for training transfer), positive personal outcomes (perception of employees about extent of positive outcomes as a result of training transfer) and job autonomy (degree to which job provides required level of freedom, independence and discretion to the employee) had highly significant relationship ($p < 0.01$) with transfer outcomes implying the importance of such factors. Relationship between domain three and transfer outcomes was highly significant ($p < 0.01$) and concludes that conducive organizational support climate is important for training transfer. *Julliet et al. (2010)* reported that supportive environment is necessary to enhance training transfer. The respondents' perceived-opinion towards transfer outcomes was comparatively less favourable. This may be due to their less favourable opinion towards organizational climate. Influence of variables of first three domains towards transfer outcomes is depicted in empirical model (Figure 1). This model contributes theory building and adds to training literature too.

Concurrent evaluation: The results in Table 3 confirm that CAFT programmes were effective. but, infers the

Table 3. Evaluation of training effectiveness

Evaluation Criteria	Average score	
	CAFT 1 (n=20)	CAFT 2 (n=14)
Theoretical backup	4.2	4.1
Hands-on experience	3.9	3.8
Quality of resource material	4.3	3.9
Extent of involvement of guest faculty	4.0	4.3
Level of training seriousness maintained	4.8	4.3
Boarding	3.1	4.3
Lodging	2.9	4.3
Transport	3.0	4.0
Learning environment	4.5	4.3
Faculty capacity	4.9	4.3
Theoretical backup	4.2	4.1

(5-Excellent; 4-Very good; 3-Good; 2-Average; 1-Poor)

Table 4. Knowledge and skill gain of participants of CAFT 1 (n=18)

Participant no.*	Pre-exposure knowledge scores	Post-exposure knowledge Scores	Knowledge gain (%)	Pre-exposure skill scores	Post-exposure skill Scores	Skill gain (%)
1	27	42	36	64	88	27
2	49	78	37	66	105	37
3	45	77	42	89	102	13
4	42	46	9	110	105	-5
5	54	81	33	76	71	-7
6	37	55	33	51	98	48
7	37	66	44	62	111	44
8	46	58	21	92	101	9
9	29	51	43	62	113	45
10	35	49	29	55	64	14
11	26	60	57	78	91	14
12	40	56	29	60	82	27
13	43	63	33	78	105	26
14	37	57	35	49	81	40
15	47	57	18	110	111	1
16	57	73	22	104	110	5
17	24	48	50	110	123	11
18	32	80	60	116	123	6
Average	39	61	36	80	99	20

Paired-t value 8.58055E-08 (p<0.001) **; 6.44145E-18 (p<0.001) **

(* -Out of 20 participants, two did not present during the post-exposure test)

need for improvement in hands-on experience, quality of resource material, boarding and lodging facilities and transport facilities. The significance of logistics in influencing training effectiveness was reported by *Hamid (2011)* and *Adeyemo (2012)*. Importance of adequate hands-on practical and quality resource material as influencing factors of training effectiveness was reported by *Ansari and Chandragi (2000)* and *Kline (2009)* respectively. At CAFT 1, the training was effective enough to result in significant knowledge (36%) and skill (20%) gains (Table 4).

Evaluation by peer group and deputing authorities: The use of peer group is seen as an important component in evaluating teaching effectiveness (*Yon et al. 2010*). In that way, peer group and deputing authorities of the CAFT participants either agreed or strongly agreed towards performance enhancement of CAFT participants (Table 5).

Training effectiveness and preferred methodologies: Interactive lectures, demonstrations and hands-on practical's were the most-preferred training methodologies (Table 6). Most of the respondents (79%)

Table 5. Assessment of peer group and the deputing authority (N=129)

Performance assessment indicators	Av.score
Designing new course curriculum	3.9
Refining existing course curriculum	4.0
Style of explaining subject to students	4.3
Preparation of teaching resource materials/ manuals	4.4
Presentation of subject information	4.4
Level of scientific interaction	4.3
Selection of research topics for PG/ PhD students	4.0
Style of guiding the PG/ PhD Students research	4.0
Preparing proposal for new research projects	4.3
Refining methodology of on-going research projects	4.0
Applying for external-funded projects	4.0
Procurement of lab equipments	4.0
Establishment of new laboratories	3.8
Offering consultancies	3.7
Research publications	4.3
Organizing farmers' training programmes	3.9
Organizing outreach programmes	3.6

(5-Strongly agree; 4-Agree; 3-Undecided; 2-Disagree; 1-Strongly disagree)

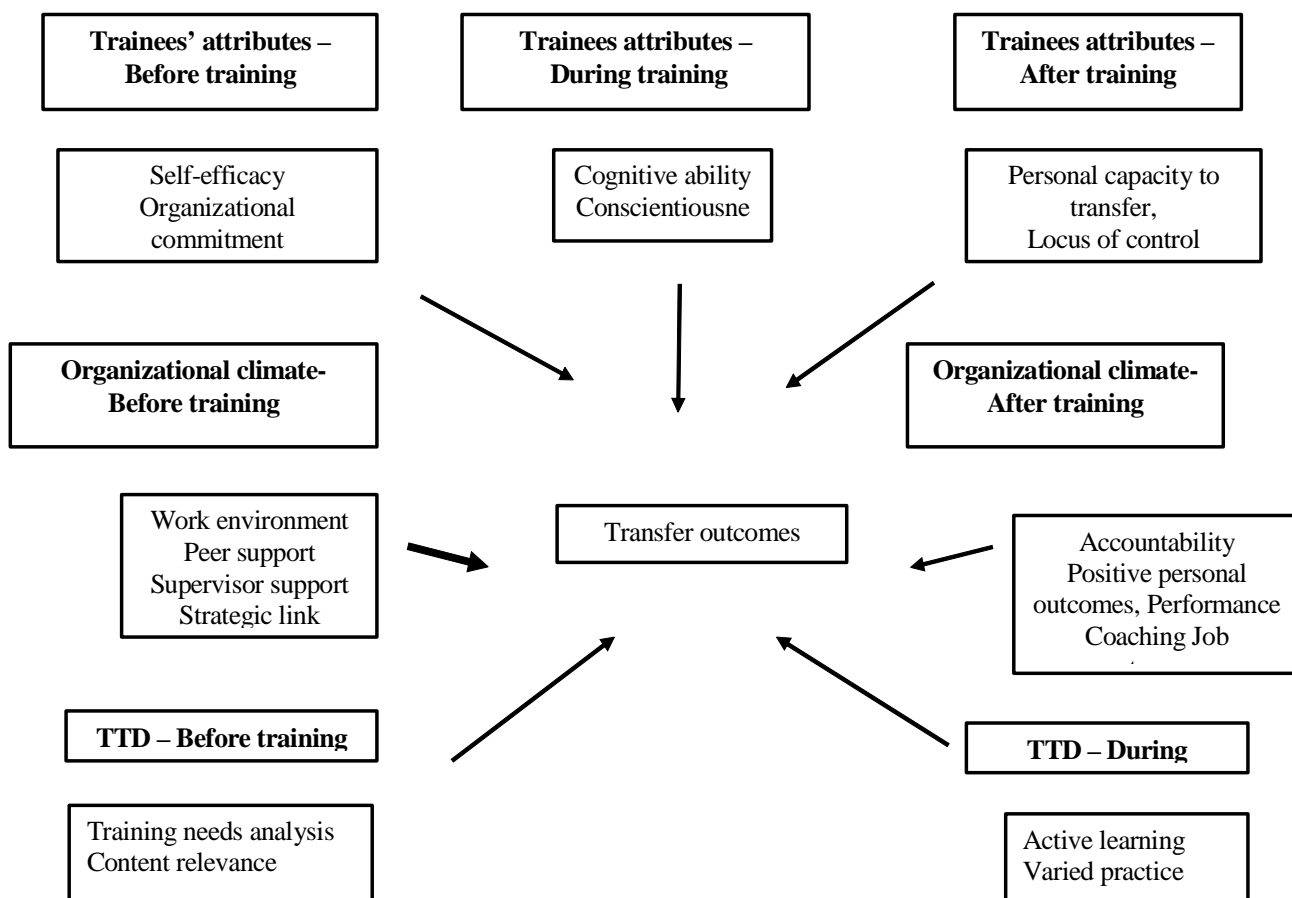


Fig 1. Empirical model on variables influencing training impact

opined that ratio between theories and practical should be either 50 : 50 or 60: 40 (Table 7). Majority of them (61%) preferred winter as preferred training season. Most of them suggested that training should not exceed 21 days (74 %) and preferred (79%) a formal training evaluation to assess effectiveness of individual programmes. These preferences need to be addressed.

Table 6. Preferred methodologies (N=271)

Preferred methodologies	Av. Rating
Interactive lectures	9
Demonstrations	9
Hands-on practical	9
Field studies	8
Project work	7
Group exercises	8
Exposure visits	8
Case studies/analyses	7
Behavioural games/role plays	7

(Rating ranges from strongly agree-10 to strongly disagree-1)

Table 7. Preferred training pedagogy (N=271)

Training aspect	Category	No.	%
Theory: Practical	50:50	121	44
	60:40	100	35
	75:25	40	17
	No response	10	4
	Total	271	100
Duration (Days)	Up to 15	84	31
	16-21	117	43
	>21	57	21
	No response	13	05
	Total	271	100
Participation Season	Summer	33	12
	Monsoon	11	04
	Winter	165	61
	No response	62	23
Total	271	100	
Training Evaluation	Yes	214	79
	No	40	15
	No response	17	06
	Total	271	100

CONCLUSION

Perception of respondents towards variables of self-attributes, training design and delivery of CAFT programmes and organizational climate and relationship of such variables with transfer outcomes concluded that CAFT programmes were effective in addressing objectives. Results of evaluation of peer group and deputing authorities of CAFT participants and that of concurrent evaluation confirm these results. Results of ex-post-facto assessment and concurrent evaluation suggest strategies for enhancing impact.

Recommendations

- Training effectiveness and training transfer is a combined responsibility of participants, sponsoring organization and CAFT centres.
- The participants must exhibit self-efficacy, organizational commitment, cognitive ability, personal capacity to transfer and conscientiousness.
- Supporting organizational climate must leverage effective training transfer in terms of peer and supervisor support, performance coaching, job autonomy etc.
- The participants must be made accountable for training transfer by facilitating positive personal outcomes.
- CAFT participants must formally share their training experiences and resources through formal forums.
- Training design and delivery must ensure adequate training needs assessment, content validity, active learning and varied practice and influence perceived utility on CAFT programmes
- CAFT centres must ensure to provide quality resource material. Training logistics including comfortable accommodation, boarding, transport facilities etc. also account for training effectiveness and hence need to be addressed.
- Interactive lectures, demonstrations and hands-on practical are most preferred training methodologies and hence, must be adequately utilized. Training evaluation must be made mandatory through pre and post-exposure knowledge or skill or both tests.

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REFERENCES

- Adeyemo, A Sunday (2012). The influence of teachers' supply and the provision of laboratory facilities on students' achievement in Physics. *European J. of Edu. Studies*, **4** (3): 397-409.
- Ansari M. R and Chandragi, D. M. (2000). Effectiveness of induction training programme organized for Assistant Agricultural Officers (AAOs). *J. of Ext. Edu.*, **11** (1): 2645-2650.
- Arthur, Winfred Jr., Winston, Benette Jr., Pamela, S Edens and Suzane, T Bell (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *J. of Applied Psycho.*, **88** (2): 234-245.
- Chella, T., Rama Rao, D and Nanda, S. K. (2007). Assessment of qualitative rating of colleges in State Agricultural Universities. ICAR-AP Cess Project. Project Report, NAARM, Hyderabad.
- Cheng, E. W., Land Danny, Ho D. C. K. (2001). A review of transfer of training studies in the past decade. *Personnel Review*, **30**(1): 102-118.
- Chibaru, D. S., Karen, van Dam and Holly, M. Hutchins (2010). Social support in the work place and training transfer: A longitudinal analysis. *Intl. J. of Selection and Assessment*, **18** (2): 187-200.
- Church, A. Hand Waclawski, J. (2001). Hold the line: an examination of line vs. staff differences. *Human Resource Management*, **40**(1): 21-34.
- Colquitt, J. A., LePine, J. A and Noe, R. A. (2000). Towards an interactive theory of training motivation: A meta-analytic path analysis of 20 years of research. *J. of Applied Psycho.*, **85** (5): 679-707.
- Goldstein, I. L and Ford, K. J. (2002). Training in organizations, Need Assessment, Development and Evaluation. Belmont CA: Wadsworth Thompson Learning.
- Hamid, Sheeba (2011). A study of effectiveness of training and development programmes of UPSTDC, India-An analysis. *South Indian J. of Tourism and Heritage*, **4** (1): 72-82.
- Holton, III E. F., Bates, R. A and Ruona, Wendy E. (2000). The Development of a Generalized Learning Transfer System Inventory *Human Resource Development Quarterly*, **11**(4): 333-360.

- Joshi, P. K. (2011). Quality of agricultural education on the decline. NISCAR Blog. <http://blo.niscar.res.in/p=194>, accessed 25 February 2013.
- Julliet, Wanjiku., Franklin, Mairura and Frank, Place (2010). Assessment of professional Training programmes in International Agricultural Research Institutions: The case of ICRAF. *The J. of Agril. Edu. and Ext.*, **16** (4): 413-431.
- Kirkpatrick, DL. (1959). Technique for evaluating training programmes. *J. of the American Society of Trg. and Dev.*, **13**:3-9.
- Kline (2009). Essential skills in instruction. Final Report, Skill plan: Vancouver.
- Pham, T. P., Nga Mien., Segers, S. R and Wim, H. Gilselaers (2010). Understanding training transfer effects from a motivational perspective: A test of MBA Programmes. *Business Leadership Rev.*, **8** (3): 1-25.
- Rajeev, P., Mada, M.S and Jrayajan K. (2009). Revisiting Kirkpatrick's Model-An Evaluation of an Academic Training Course. *Current Sc.*, **96**(2): 272-276.
- Rasheed, Sulaiman V and Anne, W. Van den Ban (2008). Reorienting agricultural extension curricula in India. *The J. of Agril. Edu. and Ext.*, **7**(2): 69-78.
- Salas, E and Cannon-Bowers, J. A. (2001). The Science of training: A decade of progress. *Annual Review of Psycho.*, **52**: 471-499.
- Subedi, Bhawani Shanker (2004). Emerging trends of research on transfer of learning. *Intl. Edul. J.*, **5**(4): 591-599.
- Tamboli, P.Mand Nene, Y. L. (2011). Revitalizing Higher Agricultural Education in India: Journey Towards Excellence. *Asian Agri-History Foundation*, Secunderabad 500009, India, pp. 316.
- Venkattakumar, R., Sontakki, B. S., Manikandan, P and Dhandapani, D. (2012). Training transfer in National Agricultural Research System and Implications, NAARM, Hyderabad, pp 54.
- Venkattakumar, R and Sontakki, B. S. (2012). Effectiveness and training transfer of Centre for Advanced Faculty Training (CAFT) programmes at National Agricultural Research System (NARS). Project Report, National Academy of Agricultural Research Management (NAARM), Hyderabad, pp. 110.
- Warr P., Allen, Cand Birdi, K. (1999). Predicting three levels of training outcome. *J. of Occ. and Org. Psycho.*, **72**: 351-375.
- Yamnill, S and McLean, G. N. (2001). Theories supporting transfer of training. *Human Resource Dev. Quarterly*, **12**(2): 195-208.
- Yon Maria., Charles, Burnap and Gary, Kohut (2010). Evidence of Effective Teaching: Perspectives of Peer Reviewers. *College Teaching*, **50** (3): 104-110.

