Professional Development of Teacher Educators on ICT Integration in Education for Establishment of Community of Practice for Sharing Learning Resources and Teaching-learning Practice: An Evaluation

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Abstract

Continuous professional development of teachers and teacher educators are necessary pre conditions for any changes that take effect in the schools. To reach out large number of teachers and teacher educators in a country like India it is not practically possible. Therefore Commonwealth Educational Media Centre for Asia's (CEMCA) decides to harness the potential of technology for this continuous renewal of knowledge and expertise of teacher educators and implement a community of practice where they grow professionally as a community together. Technology should be a tool to help educators meet their continuous professional development need. CEMCA in its three years (2012-14) cycle of programmatic interventions under the sector of teacher education engaged in promoting adoption of blended approach to ICT integration in continuous professional development of teacher educators. In this period, CEMCA organised/supported several trainings on ICT integrated Teacher Education and contributed towards building of a Community of Practice (CoP) for teacher educators. Within this framework, CEMCA has developed an online CoP platform for Teacher Educators. The programme was for enabling teacher educators to integrate ICTs into their professional development and develop a self-supporting and sustainable CoP. ICT skill training is another component of the activity, and the assumption is that all those teacher educators trained will use the CoP regularly to help each other in a peer and collaborative learning mode to develop a "culture of sharing" best practices and experiences. After three year, the programme was evaluated using deferent data collection methods. The data for the evaluation was collected from various sources like teacher educators, master trainers, DSCERT, ITFC, principals of DIETS using focus group discussion, personal interview-face to face mode and telephonically, questionnaires, online survey using Google forms and meta-analysis of the existing reports by ITFC and CEMCA. The data collection also involved review of the resources provided, the outputs created, Media-Wiki based online Karnataka Open Educational Resources (KOER), and the Google mailing group's postings. On this effect the evaluation study found significant findings viz. i) Various aspects of the training programme were appropriate and effective except the duration of the programme; ii) It was for the topics like Kgeography, Marble, wiki, and PhET only about fifty percent felt it very relevant to their work. Amongst all the topics it was for spread sheet, presentation, word processing, mailing groups, e-mail and Ubuntu platform the participants viewed highly relevant since about 80% of them rated this as 6 and above; iii) The training was effective in developing and improving ICT skills and competencies related to all the areas in which the participants were trained; iv) In all the case mailing group postings, mailing group replies and concept maps the contribution was good and it is sustained even now; v) About 60% of the participants reported that they have either conducted a formal training programme or acted as resource persons in various training programme; vi) Most of them were happy with the topics introduced and requested for additional training on wiki and KOER, Ubuntu, audio, video, and image editing, freemind, kalzium, geogebra, and PhET. There were request to include website development, e-learning, creation of subject videos, pedagogical sessions, mobile learning,

other online teaching tools, exposure to assessment tools including rubrics, online forms, content management system, and Kannada language software.

Introduction

It is both reasonable and expected that technology should help lead the way to improve teaching and learning in our schools. However such use would happen only if our teachers are equipped to use the technology efficiently and effectively. Continues professional development of teachers and teacher educators are necessary pre conditions for any changes take effects in the schools. Technology is rapidly changing and as a result there is also corresponding changes in the way our students learn. There is also corresponding changes happening in the pedagogical practices. Therefor any one shot approach to professional development can't be solution. Teachers and teacher educators need to continuously keep themselves up to date and relevant. Secondly to reach out large number of teachers and teacher educators in a country like India it is not possible practical. Therefore Commonwealth Educational Media Centre for Asia's (CEMCA) decide to harness the potential of technology for this continuous renewal of knowledge and expertise pf teacher educators and implement a community of practice where they grow professionally as a community together. Technology should be a tool to help educators meet their continuous professional development need. Commonwealth Educational Media Centre for Asia's (CEMCA) in its three years cycle of programmatic interventions under the sector of teacher education engaged in promoting adoption of blended approach to ICT integration in continuous professional development of teacher educators. In 2012-13, 2013-14 and 2014-15, CEMCA organised/supported several workshops on ICT integrated Teacher Education and contributed towards building of an online platform Community of Practice (CoP) for teacher educators.

The Programme and its Goals/Objectives

The programme was initiated with basic assumption that there is a strong need to train existing teachers to use Information Communication Technology (ICT) effectively and that requires a Continuous Professional Development approach to handle capacity building of teacher educators in a blended learning model to help them integrate both knowledge and skills related to use of ICTs in education. Recognising the importance and the expressed need of the stakeholders, CEMCA has embarked on developing a Continuous Professional Development framework for developing ICT capabilities of teacher educators with the assumption that the impact of such an approach will be passed on to the level of school teachers and it will also be a sustainable way to improve quality teacher education.

Within this framework, CEMCA has developed a Community of Practice (CoP) for Teacher Educators with the support of IT for Change (ITFC), Bangalore. The project was for enabling teacher educators to integrate ICTs into their professional development and develop a self-supporting and sustainable 'Communities of Practice (COP). ICT skill training is another component of the activity, and the assumption is that all those teacher educators trained will use the CoP regularly to help each other in a peer and collaborative learning mode to develop a "culture of sharing" best practices and experiences.

To this end CEMCA in collaboration with IT for Change organised various workshops for teacher educators with the specific objectives to:

1. Provide hands-on training on information and communication technology (ICT) to teacher educators;
2. Assist the teacher educators to use the WWW, Web 2.0, and the CoP to develop teaching and learning resources and share with other teacher educators;
3. Develop a sense of sharing, peer learning and collaboration amongst the teacher educators; and

4. Share best practices in the use of learning materials available freely for improving school education.

The details of the workshops covered under this evaluation are given below:

Sl. No.	Date	State	Venue	Number of Teacher Educators
1	June 3-7,2013	Karnataka	ITFC, Bangalore	23
2	11-15 June 2013	Karnaraka	Dharwad DIET	19
3	21-25 October, 2013	Karnataka	Rural DIET, Bangalore	29
4	11-15 November, 2013	Karnataka	Dharwad DIET	25
5	10-14 March, 2014	Karnataka	Urban DIET, Bangalore	21
6	January 20-24, 2015	Karnataka	Rural DIET, Bangalore	25
7	February 03-07, 2015	Karnataka	Rural DIET, Bangalore	21
Teacher educators trained as Master Trainer.		Total		163

Purpose of Evaluation

This evaluation report is the outcome of evaluating of this programme of CEMCA. It provides a view of the issues concerning the effectiveness of technology in its role to enhance education. This report is intended for use by educational leaders and policymakers who are concerned with making optimal use of technology in the schools. Specifically, this report:

The evaluation was carried out with the following purpose

1. Carry out evaluation to address the Outcomes and Performance Indicators as articulated in the 2012-2015 TYP
2. Gather baseline data on the Performance Indicators to set as benchmark for evaluation
3. Facilitate the integration of gender by collecting gender-disaggregated data and tracking CEMCAs interventions on gender equality
4. Provide evidence on whether the use of technology and ICT advocated by CEMCA has been relevant to the outcomes sought.

Core Evaluation Questions

- What were the activities conducted as part of the training?
- How was the sessions conducted in face to face mode?
- How was the sessions organized on online mode?
- What were the resources both human and material used in the programme?
- How the learner feedback provided and what was their frequency?
- What where the baseline data collected about the trainees and how was this utilised for the programme?
- How did the impact of the programme on skills, knowledge, and attitude measured?
- What were the follow up strategies planned and implemented and what are its effects?
- What were the outputs, outcomes, and impact of the programme?
- What were the contextual and other factors which positively and negatively influenced the programme?

Methodology

Based on this, specific evaluation framework was developed for this evaluation and the same is given below:

Inputs	Activities	Outputs	Outcomes	Performance Indicators	Impacts
7 workshops of five-day duration for each group Participants – 163 teacher educators Cop web portal KOER platform Mailing lists Master resources persons (3 in each subjects of maths, science, language, and S.S(geography) Handouts, background notes, ICT books and chapters	Training in basic ICT skills Participating in COP platforms Accessing web resources Networking through mailing groups Exposure to educational tools such as Geogebra (link is external), Audacity, PhET, Marble, KGeography, Kalzium, and Freemind, video creating tool Record My Desktop, image editing tool GIMP Practised use of web tools such as search, maps, translate, books, videos on Youtube, digital albums etc. Exposure to OER in general and KOER in particular. Created personal digital resource libraries Collaborative readings, tutorials , demonstrations, hands on training, peer review	Model lessons Learning resources (audio, graphics, video, text) Mailing groups messages/postings KOER pages and edits Discussion groups Feedbacks collected	Teacher education institutions use emerging technologies and practices to support ODL policies, systems and quality materials development	Five institutions adopt ICT teachers' blended learning model for continous professional development	A sustainable and equitable increase in the number of citizens in commonwealth Asia acquiring the knowledge and skills for leading productive and healthy lives through formal and non-formal open and distance learning opportunities

All 163 teacher educators who trained in 7 workshops (see table above) included in the study as sample. The data for the evaluation was collected from various sources like teacher educators, master trainers, DSCERT, ITFC, principals of DIETS using focus group discussion, personal interview -face to face mode and telephonically, questionnaires, online survey using Google forms and meta-analysis of the existing reports by ITFC. The data collection also involved review of the resources provided, the outputs created, KOER, and the Google group's postings.

Data Collection Methods

The data sources were CEMCA, IT for Change, master trainers, teacher educators, DSERT personal. ***Data pertaining to following aspects were collected from these sources***.

1. Need assessment data of participants
2. The programme logic model
3. Baseline IT awareness and competency data of participants
4. Baseline data regarding ICT integration practices of DIET and teacher educators
5. Programme objectives
6. Impact of training on ICT skills and practices
7. Contextual influences on programme implementation

8. Schedules and activities (initial and subsequent)
9. The processes involved in the training (online and offline) programme
10. Expected outputs and created outputs
11. Expected outcomes and achieved outcomes
12. Organizational impacts

Data were collected involving various methods as given below

1. *Field visits and field notes:* the investigator personally visited 8 District Institute of Education and Training (DIETs), ITFC Office, and Department of State Education Research and Training (DSERT) and personally observed the facilities available and interacted with people and made filed notes.
2. *Focus groups:* focus group interviews were conducted with ITFC personal, DSERT officials, and teacher educators from 8 DIETs
3. *Questionnaire and survey:* a questionnaire was developed (appendix-) and digitised and administered using Google form to the teacher educators. Forty six teacher educators responded to the survey
4. *Document Analysis:* an analysis of various reports by ITFC and CEMCA, analysis of activities, resource materials etc. were taken up
5. Analysis of online interaction logs, frequency of interaction, quantity and quality of online contributions

The data were collected by the consultant by using the following procedure

1. Meta-analysis of work shop reports and feedbacks of participants submitted by IT for change
2. Visited IT for change and interacted with personal involved in planning and implementing the programme. The focus group interview was conducted using a an interview schedule
3. Visited six DIETs and interacted with principals of DIET and the trained teacher educators, master trainers. This involved personal interaction/ interview, focus groups, observation, administration of questionnaire and with some master trainers telephonic interview was also done.
4. Personal visit to the DSERT and interacted with officials of the DSERT who were associated with the training programme
5. Collected information about online interaction and contribution by looking in to web portals and the logs
6. Administered the Online survey using Google form and collected the data from teacher educators

Major Findings & Conclusions and Recommendations

Major Findings and Conclusions

1. Awareness about various Technology Tools

The participant's awareness about various technology tools before the training programme was collected using a four point rating scale ranging from not at all aware to fully aware. From the data thus collected and analysed, it is concluded that the participants had no awareness or very poor awareness about most of the technology tools except e-mail, accessing web resources, and office applications like word processing, spread sheet and presentation. Highest percentage (94%) of them was aware about e-mail.

2. Effectiveness of the Various Aspects of the Training

Feedback regarding eight dimensions namely a) appropriateness of the course content, b) duration of the programme, c) effectiveness of the resource persons, d) adequacy of the resource materials, e) effectiveness of the training strategies used, f) online support provided, g) training facilities provided, and h) and overall effectiveness of the programme were collected using the questionnaire. The data were collected using a 10 points rating in which 1 indicating not at all effective/not at all appropriate to 10 indicating very much appropriate/very much effective. From the data thus collected and analysed, it is concluded that the various aspects of the training programme were appropriate and effective except the duration of the programme. The participants were not very satisfied with the duration of the programme and they indicated the need for increasing the duration of the training programme.

3. Relevance of the Course Content

The data were collected regarding the relevance of the various topics covered in the course to their job as teacher educator. The data were collected using a 10 points rating in which 1 indicating not at all relevant to 10 indicating very relevant. From the data thus collected and analysed, it is concluded that in general participants viewed most of the training inputs as relevant to their work as teacher educators. It was for the topics like Kgeography, Marble, wiki, and PhET only about 50% felt it very relevant to their work.

Though there was about 70% of them viewed KOER as very relevant, it is not clear why only about 55% of them felt wiki as relevant to their work. This may have been due to the lack of understanding among some participants that KOER is a wiki platform and wiki is something different. Amongst all the topics it was for spread sheet, presentation, word processing, mailing groups, e-mail and Ubuntu platform the participants viewed highly relevant since about 80% of them rated this as 6 and above.

4. Participants Involvement in the Training Program

The participants were asked to rate the extent of their participation and involvement in the training programme in a five point scale of not at all involved, somewhat involved, average involvement, good involvement, and totally immersed. The data thus collected and analysed indicated that there was good involvement and participation from almost all of them in the training programme. This question was specifically included with assumption that for any training programme to be effective, the commitments and involvement from the participants is of utmost importance.

5. ICT Skills Before and After the Training

In order to assess the impact of the training programme on the development of various ICT skills and competencies, the participants were asked to self-report their competency level in using various tools and technologies before and after the training programme. From the data thus collected and analysed, it is concluded that the training was effective in developing and improving ICT skills and competencies related to all the areas in which the participants were trained. Further comparative analysis of skill improvement in various areas resulted in the following findings:

- More than 50% of the participants had skill in using word processing, presentation, e-mail, and accessing web resources even before the training and it was highest for e-mail use (80.4%).

- After the training, more than 87% of them developed the skill in using Ubuntu, word processing, spread sheet, presentation, wiki, e-mail, mailing groups, KOER, and accessing web resources. In case of e-mail all of them developed the skill in using it.

- With regard to PhET, KGeography, Kalzium more than 25% of them did not develop the skill and competencies in using it.

- More than 34% of them had average or above average skill in using word processing, spread sheet, presentation, e-mail, mailing groups and accessing web resources with highest among this being e-mail with 67%.

- 80% and above participants developed average and above average skills and competencies in using Ubuntu, word processing, spread sheet, presentation, e-mail, mailing groups and accessing web resources with 93% for e-mail.

6. Extend of ICT Use before the training, immediately after the training, and now

In order to find the extent of use of various ICT tools and technologies before the training, immediately after the training, and the current use, the participants were asked to self-report the extent of use in all three phases. The data thus collected analysed and the major findings and conclusions are given below:

- In the case of all tools and technologies there is significant increase in the number of users after the training programme and further there is a marginal increase in the current users for all but audio and image editing. Hence it is concluded that the programme was effective in making participants learn and use these tools and sustain its use.

- From the table 3.2 it can be concluded that with regard to Ubuntu, word processing, spread sheet, presentation, e-mail, mailing groups, accessing web resources, and sharing resources there is good number of participants who are already using these tools before the training with an average percentage of users being 30% and highest being e-mail users with 65.3%.

- With regard to word processing, spread sheet, presentation, e-mail, mailing groups, and accessing web resources the percentage of users is increased to above 70% immediately after the training and they continue to use these tools even now with e-mail users as highest with 95.7%

- In case of Ubuntu, OER, KOER, and sharing resources the percentage of non-users were about 70% and this changed to about 50% of users immediately after the training programme and this increased to 70% users now

- In case of audio, video, image, wiki, marble, PhET, Kgeography, Kalzium, recordmydesktop, though there is a significant increase in the percentage of users, the percentage of users remain 50% or low

7. Use of Tools after the Training Program and the Nature of Use

About 83% of them reported that they have used the tools and about 17% reported that they have not used the tools. The nature of use reported is as follows:

- Presentation to conduct various training programmes and D.Ed. classroom teaching
- E-mails for official and personal correspondence and sharing resources. Created e-mail ids for participants and encouraged them to send mails and continued corresponding with them through e-mails
- Word processing for official correspondence, training materials, preparation of reports, and creating resources for sharing
- Installed Ubuntu on personal and official laptop/computers an used for training programmes and personal use
- KOER for creating resource, updating information and for further training programmes
- PhET, Geogebra, freemind, and kalzium were used in training of mathematics and science teachers. In addition Diploma in Education (D.Ed.) trainees were also exposed to these tools
- Accessed web resources to update the knowledge of technology tools and subject matter

8. Outputs during the Training and after the Training (up to now)

In order to find the different types of outputs created by the participants during and after the training, they were asked to self-report by choosing the appropriate number ranges in the questionnaire for before and after the training until now and based on the data thus collected the following conclusions are made.

- In all the case mailing group postings, mailing group replies and concept maps the contribution was good and it is sustained even now. However in the case of wiki page creation, wiki page editing, audio, video, and graphics the contribution was low. Except in case of mailing group postings and replies in all other cases the contribution reduced after the training programme as compared to during the training programme.

- In case of wiki page creation and wiki page editing the contribution was low during and after the training programme with about 30% of them making contribution. It is also observed that in both the cases the contribution reduced after the training programme as compared to during the training programme.

- In the case of mailing groups postings and mailing group replies the contribution was good during and after the training programme with about 70% of them making contributions. It is also observed that in both the cases the contribution increased slightly after the training programme as compared to during the training programme.

- In the case of concept map the contribution was good during and after the training programme with about 74% of them making contributions during the training and about 60% making contributions after the training. However in case of audio editing the contribution was low during and after the training programme. It is also observed that in both the cases the contribution reduced after the training programme up to now as compared to during the training programme. It is encouraging to observe that about 60% participants continued to create and use concept maps even after the training programme.

- In case of video and graphics, the contribution was low during and after the training programme with about 35% of them making contribution now. It is also observed that in both the cases the contribution reduced after the training programme up to now as compared to during the training programme.

9. Formal Training Conducted and their Nature

About 60% of the participants reported that they have either conducted a formal training programme or acted as resource persons in various training programme as follows:

- District level training programme for D.Ed. college lecturers.
- Calc training to the primary teachers.
- Subject Teacher Forum (STF) training to high school teachers.
- ICT mediation for DEd. teacher educators
- Digital Lesson Plan for DIET staff in Tamil Nadu.
- Digital Educational Content for 240 Teachers at various stages
- Email training for D.Ed. students and presentation for teachers
- Resource person in KOER training by DSERT
- Web induction training programme for teacher educators

10. Training in an Informal Manner and their Nature

About 43.5% reported that they have imparted technology training to others in an informal manner. The areas/topics in which the informal training imparted were Ubuntu, spread sheet, image editing, e-mails, using web resources, KOER, mailing groups, audacity, freemind, and record my desktop. The training was imparted to D.Ed. trainees, colleagues, children, and other subject workshops.

11. Further Training Undergone and their Nature

Only about 23.9% of them have undergone further training in same and or related areas of ICT in education. The type/areas of further training reported were mind mapping, subject teacher forum training, KOER workshop, web induction, use of Kannada resources, and online training.

12. Self-initiated Learning and its Nature

Only about 32.6% of them have indicated that they have learned further about technology integration as self-initiated learning. The type/areas of further training reported were cloud computing, video editing, MOOC, KOER, Google form, grading and assessment tools, and audacity.

13. Achievement of Objectives

- ***Objective One:*** *Provide hands-on training on information and communication technology (ICT) to teacher educators*– It is concluded that about 30% of the participants have felt that the training provided them sufficient hands on experience with ICT and about 40% felt that it could satisfy this objective to some extent. However about 30% of them felt that it could not achieve this objective to a satisfactory level. This is also clear to the open ended suggestion that they needed more hands-on experience and the training duration need to be increased.

- ***Objective Two:*** *Assist the teacher educators to use the WWW, Web 2.0, and the COP to develop teaching and learning resources and share with other teacher educators*- It is concluded from the data that about 24% of the participants have felt that the training provided them sufficient exposure to use the www, web 2.0, and the community of practice to develop teaching and learning resources and share with other teacher educators and 43.5% felt that it could satisfy this objective to some extent. However about 33% of them felt that it could not achieve this objective to a satisfactory level. This is also clear to the open ended suggestion that they needed more hands-on experience and the training duration need to be increased.

- ***Objective Three:*** *Develop a sense of sharing, peer learning and collaboration amongst the teacher educators*- it is concluded from the data that about 30% of the participants have felt that the training provided them sufficient experience to develop a sense of sharing, peer learning and collaboration amongst them and 41.3% felt that it could satisfy this objective to some extent. However about 28% of them felt that it could not achieve this objective to a satisfactory level. However it is not clear why a sizable number of them felt that they could not achieve this objective.

- ***Objective Four:*** *Share best practices in the use of learning materials available freely for improving school education*- it is concluded that about 37% of the participants have felt that the training helped them share best practices in the use of learning materials available freely for improving school education and 37% felt that it could satisfy this objective to some extent. However about 26% of them felt that it could not achieve this objective to a satisfactory level.

14. Strength of the Program

The participants pointed out many strength of this programme and the same is summarised below:

- Introduction to wiki through KOER and that too in Kannada made them realise that they too can be the creator of information and share it for the use of others.
- Exposure to the whole new world of technology tools which they were not at all aware and its link to the content and pedagogy
- Introduction to various communication and collaboration tools like wiki, forum, mailing groups, video conference and e-mail

- Dynamic and competent resource persons who are ever ready to help both offline and online and motivated them all for the work. The participant's collaboration and support among themselves was strength of the programme.
- The teacher educators were not given training earlier in these ICT tools therefore they felt all the contents in this programme as very useful for teacher educator.
- The programmes has helped them develop their professional competencies and personal productivity
- Creating, uploading and sharing resources though challenging were very interesting and useful and many of the activities helped in developing higher order ICT competencies.
- Provided a unique platform to the teachers under to share their innovative Ideas regarding the pedagogy and methods of evaluation, sharing of problems and getting immediate solution regarding academics was an excellent experience.
- Exposure to mailing groups opened up another excellent opportunity for collaboration and learning and facilitated further group's formation.
- Strong planning, meticulously prepared modules, hands-on and peer sharing are the core areas of the exceptionality of this programme

15. Weakness of the Program

The participants pointed out some weaknesses of this programme and the same is summarised below:

- There was not much scope for practice of the skill after the training programme and no follow up workshop was conducted.
- The workshop started off well and appropriately paced. However towards later part some of them expressed difficulty in coping up with the pace of delivery and some things were not clear to them
- Almost all of them were not happy about the duration of the programme and expressed the need for increasing the duration
- A few were not happy with the facilities provided and suggested that air-conditioned computer labs would be good
- Many new ideas and less duration to learn and practice was the concern expressed by a few
- Getting familiarity with Ubuntu platform was difficult and lack of proficiency in English was a concern of a few individual. They felt that those familiar with ICT skills already could grasp well and faster.
- Lack of continuity in the training and use along with poor infrastructure in the schools were also concerns expressed.
- Instead of two participants using one computer there should have been provision for individual computers

16. Difficulties and suggestions

A few difficulties and suggestion expressed by the participants are presented below:

- Resource persons to be trained much more effectively.
- Accommodation facility should be provided near to the training centre.
- More hand on experience to be given, followed by feedback.
- Duration of the programme to be increased and lesson planning activities to be included
- Individual computers are needed for the best practice.
- Less hands on practice; difficult to face new technology training; because not aware before.
- Use of FOSS should be made mandatory
- There should have been more care in selection of participants. Select the one who has the right attitude and motivation towards technology integration
- Well-equipped systems and infrastructure should be provided to individual Participants.
- Provide good demonstration classes in technology integration

- At times the internet speed was a concern

17. Factors Influencing Technology Use

The evaluation found that related to the factors that affect the participants technology use is presented below:

- It is concluded that infrastructure is not a factor influencing the technology use of the most of the participants and they do have sufficient infrastructural facilities.

- Lack of administrative support is not a factor influencing the technology use of the most of the participants and they do have sufficient administrative support for technology integration.

- Nature of work is not a factor influencing the technology use of the most of the participants and their current work profiles require technology use.

- Duration of the programme is a factor influencing the technology use of the most of the participants and it is further expressed by many of them in response to the question on duration of the programme in an open ended question.

- Inadequate proficiency level developed is not a factor influencing the technology use of the most of the participants and they do have adequate proficiency level developed for technology integration. However, looking at it from another perceptive, about 48% of them felt that it affected them somewhat or even higher. During the face to face interaction many of them expressed that they did not develop sufficient proficiency to organise the cascade model workshop without the support from IT for change.

- Lack of time available is a factor influencing the technology use. This further reinforced in the personal interaction with personal from IT for change and the teacher educators that they have too many administrative work pressure that they do not find adequate time for technology integration.

- Too much of administrative tasks is a factor influencing the technology use. This further reinforced in the personal interaction with personal from IT for change and the teacher educators that they have too many administrative work pressure that they do not find adequate time for technology integration.

- Lack of technical support is a factor influencing their technology use and almost about 40% of them said it is affecting them much. This further reinforced in the personal interaction with personal from IT for Change and the teacher educators that they do not have sufficient technical support in their own institutions as well as in the institutions in which they conduct the training programme.

18. Duration of the Future Training Programmes

Most of the participants expressed that the duration of the programme is not sufficient and this need to be increased. The suggestion came up were for increasing the duration to 7,8,10, and 15 days. Most of them have suggested 7 to 10 days duration. Most importantly they wanted this training to be provided in two phases. This they said will give them ample opportunity to practice after the first phase and further strengthen these skills in the second workshop.

19. Areas of future Training Programmes

Most of them were happy with the topics introduced and requested for additional training on wiki and KOER, Ubuntu, audio, video, and image editing, freemind, kalzium, geogebra, and PhET. There were request to include website development, e-learning, creation of subject videos, pedagogical sessions,

mobile learning, other online teaching tools, exposure to assessment tools including rubrics, online forms, content management system, and Kannada language software.

20. Methods of Future Training Programme

Though many of them felt the existing methodology was good enough some of them gave suggestions to include group discussions, experiential learning, and one-to-one support with adequate internet facilities. There were also suggestions to include demonstration lessons and to provide more practical exposure. Method of explaining should be slow by providing more individual attention. The web based support need to be strengthened further. Many of them felt the need to increase the hands on practical exposure

Major Recommendations

Various recommendations based on the data analysis, interpretations and conclusions are presented here for various stakeholders:

CEMCA, New Delhi

- In case of teachers in Karnataka there is continuous engagement through various initiatives including subject teacher forum where as in the case of teacher educators this was not the case and the engagements were limited in terms of one or in some case two workshops. The cascade model did take place only for two groups/workshops since last year and this appears to be yielding results in terms further training at district level. CEMCA- continuous engagement is necessary and cascade approach since 2013 would have yielded better results.

- Over the period there is a change in attitude among the participants. It was observed that for many it was not of negative attitude toward technology but their comfort level in using and the resulting fear factor was the major impediment. During the course of the training it was observed that there is a realisation among the participants that the technology is accessible provided one has interest and commitment. The workshops helped them realise that the technology is inevitable and it is for them to decide and take the challenge and DSERT or ITFC cannot be the saviour every time and always. Genuine involvement was observed from majority of participants and what is more satisfying is that insider encouragement among them to bring new entrant to the technology fold. Further handholding in the form of continuous institutional based arrangement could be initiated by CEMCA.

- Gender continues to remains an issue. Though there is an increasing participation from women, it is still much below the 50% marks and this need to be addressed. There may be many factors contributing for this including the role they need to play at home and many of them are finding it difficult to travel to long distance.

- ITFC's experience was that the involvement and contributions from the department was very positive and they supported at every stages for successful implementation of the project. Since the ITFC involvement with the department is deep and long established at various levels covering breadth and depth of professional development programmes for teachers, getting support and commitments for this programme was not at all an issue. The participants too were very happy with the kind of training imparted by ITFC. Therefore CEMCA may continue to engage them for future training programmes.

- Teacher educators are not able to establish the connection between the workshop and their own practices due to the kind of priority set for teacher educators by the system as administrative in nature though they are academic leaders and expected to provide academic leadership. Secondly there is no provision for repeat workshops and expectation to develop equal competencies among all teacher educators to be cascade leaders is too ambitious considering their heterogeneity. There is a necessity to widen this community through

additional workshops and follow up workshops. Financial constraints are one of the reasons for not providing repeat workshops for those who are already trained.

- Since most of them felt that the duration of the programme is insufficient to develop their competencies, this need to be considered in the future workshops. Rather than increasing the duration of the workshop a second work shop of 5 day duration would much more effective. This will give them ample opportunity to practice after the first phase and further strengthen these skills in the second workshop.

- Many of them expressed the inadequacy in conducting workshops all by themselves in the cascade model. There is a necessity to support the teacher educators in planning, conducting, monitoring, evaluation, and feedback in the cascade workshop and currently there are no provisions within the existing framework. Without such an arrangement it is difficult to realise the objectives of the project completely.

- In order to make the programme more effective there is a necessity of institutional development. Current focus on developing individual capacity need to be supplemented with institutional capacity development initiatives. As a starting point a few DIETs could be adopted and work with it very closely to understand various factors and challenges faced by them as an institutions. A thorough understanding of this organization in terms the organizational culture, roles and rules, various other human factors, infrastructural facilities, organizational vision and mission is necessary for converting this in to learning organization which is capable of reaping the benefits of technology completely.

- There is synergy in terms of the priority set by the Department, ITFC and CEMCA. As long this alignment continues, there is a possibility of continued engagement and involvement. However one of the shortcomings is that CEMCA operates on annual basis and this makes it difficult to plan programmes which need longer engagements. In a field like technology integration long term engagement is must to bring tangible outcomes. CEMCA could have professional development plans for longer duration of five to six year framework with substantial financial investment and take up institutional approach rather than individual approach to make much deeper and long lasting impacts in this field. There is a necessity of moving away from event based intervention in this field. A collaborative effort of CEMCA along with UNICEF would be more desirable to reach out to other states at least in the southern region. Considering the success of the Karnataka initiatives and the satisfaction expressed by the participants, expanding this to form a regional COP could be the next immediate initiative.

- It is also important to note that all the changes reported cannot be attributed only to ITFC and CEMCA initiatives since most of them are also exposed to many other training programmes. A detailed and thorough baseline data is essential before the start of the programme to establish the exclusive effects of such interventions in the future.

- There could have been a discussion or meeting of all stakeholders together (principals, teacher educators, ITFC, CEMCA, and DSERT) in planning about the programme to decide on the components of logic model. For each programme activity, the outcomes, outputs and impact could have been identified and specified – both short term and long term.

- The logic model of CEMCA need to articulate on all aspects of logic model there is a necessity to develop a separate programme logic model for teacher education - A clear logic model illustrates the purpose and content of the program and makes it easier to develop meaningful evaluation questions from a variety of program vantage points: context, implementation and results (which includes outputs, outcomes, and impact).

- There was a necessity of formative evaluation throughout the programme in addition to the end of three year evaluations – this could have helped continuous improvement of the programme thereby achieving the end results- monitoring and mid-course corrections.

IT for Change, Bengaluru

- The baseline data was collected only for the D.Ed. curriculum training programme and not for all other programmes. The analysis of which is available in the ITFC report. However baseline data could have been collected for all other programmes too. This is very essential in deciding the effectiveness of the training programme and such baseline data will also help the policy decision and further training programmes.

- Need assessment was not conducted. The agenda of the programme is prepared at department level and the same is implemented. However it was felt that there is necessity of need assessment and such an input will make the programmes much more effective and participative. A proper need analysis would also have helped the participants to see the training in their work context therefore better motivation and transfer. This should be done for all the future programmes. Working with DIET through a continuous engagement/ adoption will be a better method of need assessment to look at the issues more holistically.

- Various tools and technologies could have been illustrated with various tasks of teacher educators and how these tools make their day to day work simpler and easier. Teacher educators also to be shown how various tools could be used by teacher trainees in their task both in teacher training institute and also in the schools

- There is a necessity to include demonstration lessons and to provide more practical exposure. The web based support need to be strengthened further. Many of them felt the need to increase the hands on practical exposure

- During the face to face interaction and also in the survey many of them expressed that though the training helped them develop their competencies in various ICT areas, they did not develop sufficient proficiency to organise the cascade model workshop without the support from IT for Change and they need further training and handholding in organizing full-fledged training programme.

DSERT, Karnataka

- There is a necessity of forming a specific set of resources persons may be from STF KOER cell/State Resource Group/District Resource Group who will shoulder this responsibility of curating the content on continuous basis. Though this necessity was felt among various authorities, the progress is rather slow. Forming and instituting a quality assurance structure/mechanism in place is one of the important next steps in KOER.
- Among teachers the community of practice got well established and they are going beyond the expectations. Among the teacher educators there were lot of initial enthusiasm during the training, however the COP failed to get established to the desired level. Further research may be conducted to ascertain the reasons and suggest remedies for the same.

- Lack of resources related to teacher education in KOER may be a reason for less participation from teacher educators. Conscious efforts in creating resources for teacher education may lead to better participation from teacher educators specifically in KOER and DSCERT may take up initiatives in this direction

- One of the major reasons for less contribution from teacher educators is that the very nature of work performed by teacher educators is mostly programmatic and administrative. There is a necessity of re-looking in to the role and functions of teacher educators in DIETs.

- It is time that more and more of their routine administrative tasks are managed by technology so that more time is left for the teacher educators to provide the academic leadership. There are number of initiatives in this direction. However more initiatives are needed to connect technology to their regular work. Research is an area where every DIET faculty need to develop further and provide leadership to teachers. Taking up technology integration studies in collaboration with teachers will give more credibility to the entire effort.

- Though there is an increase in BYOD, it is not sufficient enough to run the training totally depending on that. To this end if some financial scheme from the part of Government for every teacher educators to procure their own computing devices will go a long way in supporting the DSERT initiatives in ICT integration among teacher educators.

- If number of students enrolling for D.Ed. programme are dwindling year by year, then will the training is of any use to teacher educators to practice it in pre-service programme is the question one must answer. This training may have to be more oriented to developing competencies for only in-service programmes.

- Overall support was very positive and there was a conviction among all stake holders about the value of technology for improving learning. One of the major challenges from the learners was their heterogeneity. There was a great variation in terms of their technology background and academic depth. Somehow the system has made them view themselves more as inspectors rather than academicians. Therefore the intrinsic motivation to fully appreciate the pedagogical applications of technology tools was not evident.

- The survey revealed that lack of technical support is a factor influencing their technology use and almost about 40% of them said it is affecting them very much. This is further reinforced in the personal interaction with personal from IT for Change and the teacher educators that they do not have sufficient technical support in their own institutions as well as in the institutions in which they conduct the training programme. There is a necessity to address this issue to make the technology integration successful.

Some useful information

1. Karnataka Open Educational Resources: http://karnatakaeducation.org.in/KOER/en/index.php/Main_Page
2. Community of Practice (CoP) – teacher network an online platform for teachers and teacher educators: http://teacher-network.in/
3. India Teacher Educators Group: Indianteachereducators@googlegroups.com
4. Karnataka State Teacher Educators Group: Karnataka_teachereducators@googlegroups.com
5. You will only get STF mails sent AFTER you became a member. Many of these would be very useful for you. To read older mails, click on links given below:
   - To go the English subject teacher forum groups home page click on: https://groups.google.com/forum/#!forum/stfenglish
   - To go the Hindi subject teacher forum groups home page click on: https://groups.google.com/forum/#!forum/hindistf
   - To go the HTFKarnataka groups home page click on: https://groups.google.com/forum/#!forum/htfkarnataka
   - To go the Kannada subject teacher forum groups home page click on: https://groups.google.com/forum/#!forum/kannadastf
   - To go the Maths-Science subject teacher forum groups home page click on: https://groups.google.com/d/forum/mathssciencestf
   - To go the Social Science subject teacher forum groups home page click on: https://groups.google.com/forum/#!forum/socialsciencestf

- To go the Urdu subject teacher forum groups home page click on: https://groups.google.com/forum/#!forum/urdustf

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