

Integrating Technology Education for Professional Development of Teachers: Developmental Experiences

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Abstract

The deployment of teacher education programmes, especially to upgrade and change teaching practices, has always been a challenge for teacher educators. It is even more challenging when a group of teacher educators from conventional educational practices get together to develop an innovative professional development programme that is aimed at bringing about a paradigm shift in teaching-learning processes. This is especially so in the case of persuading teachers to integrate technology into their teaching. In spite of the emerging thrust over customization of learning experiences and greater utilization of information technology, face-to-face communication is still considered to be an ideal mode for teaching and learning process. To enable teachers to shift from their habitual approach to contemporary approach, an on-line teacher education programme is being developed by I-CONSENT, the Indian Consortium for Educational Transformation, that was formed to support the development and deployment of ICT based programs for teacher education and for school transformation. This paper describes the innovative approach adopted for the professional development of teachers. It focuses on integrating technology skills based on authentic learning situations from actual school life. It emphasizes that learning designs when prototyped according to real-life events or situations, help learners to internalize learning by engaging in critical reflection, collaborating and cooperating. This claim is supported by necessary and appropriate illustrations that reflect the uniqueness of this learning design. Most important, an attempt is made to highlight the developmental processes that took place while designing this programme

Introduction

In today's information-age, the educational systems are moving away from traditional content related learning outcomes to emphasize more learners' ability to reflect upon the given context and internalize learning during this process. Learning is no longer considered as a static experience, but is considered more as a dynamic experience, wherein it is ascertained that knowledge cannot be derived and meaningfully understood

without relating to its context. A critical element in fostering this kind of learning is to have students carry out tasks and solve problems in an environment that reflects the multiple uses to which their knowledge will be put in the future" (Brown, Collins & Newman, 1989). Highlighting reality as the ultimate learning situation, a technology integration professional development model, based on *scenario based learning*, has been developed for the teachers. A distinctive feature of this model is that it initiates teachers to integrate technology in different situations that they are likely to confront in their work place.

Scenario-based learning design is a pedagogical design in which the learning experiences of students are modeled to reflect authentic and real-life situations, and the kinds of situations that they are most likely to encounter in their workplace (Naidu, 2007). These situations are largely presented in a narrative form so as to enable the student to visualize the situation and identify his/her role in the given situation. Neal (2001) signifies stories' plasticity-the ease with which they are personalized and molded by presenters' personalities. Further, the combination of creative, narrative, and analytical modes of thinking significantly enhances students' learning experiences. According to Schank (2007), a story-centered curriculum (SCC) can be viewed as a carefully designed apprenticeship-style learning experience in which the student encounters a planned sequence of real-world situations constructed to motivate the development and application of knowledge and skills in an integrated fashion.

A scenario or situation based learning design is centered around the principles of situated cognition. Situated Cognition is a term for a family of research efforts that explain cognition, including problem solving, sense making, understanding, transfer of

learning, creativity, etc., in terms of the relationship between learners (agents) and the properties of specific environments (affordances) (Young, 1999). Many instructional design theorists are influenced by situated cognition and constructivism. Situated cognition suggests that knowledge is a relationship between the individual and the social or physical situation in which he or she learns. Knowing, from a situated cognitive perspective, is not just an independent internal mental process, but is a product of activity, context, and culture (Hansman & Wilson, 1998; Oliver, 1999). The present paper makes an attempt to unfold some of the developmental processes and challenges encountered by I-Consent team while designing a selected course of this programme.

Attributes of Scenario-based Learning

Scenario	A scenario is a narrative description of a realistic, authentic event or experience, which is presented in such a manner that the learning context is gradually introduced to the learner, by precipitating the scenario towards an unresolved conflict.
Learner's Role	The learner is associated with the given learning context or scenario by allocating a role in order to solve the unresolved conflict. This is done with a view to initiate the process of learning among the learners.
Learning Activity	The learner is given an opportunity to perform the allocated role by taking part in the assigned activities. These learning activities are sequenced in such a manner that completion of each activity would gradually enable to achieve the desired learning outcome. It is also ensured that these activities provide opportunities for critical reflection, collaborative and co-operative learning.

Assessment

The assessment of the learning outcomes in this approach would focus on the skills demonstrated by the learners such as critical reflection, analytical reasoning and problem solving, rather than on knowledge acquisition. To ensure that the students attain the desired level of attainment, guidelines are provided to the students in the form of self-assessment checklist.

The “B.eEd (Bachelor of e-Education)” Programme

The B.e-Ed programme, is a graduate level teacher training program that focuses on the pedagogy of technology mediated learning and ascertains certain specific learning and developmental outcomes, that link education to development. The students enrolled in this program are either graduates or post-graduates seeking suitable careers in the field of education. The course consists of six core subjects and two optional subjects. The core papers are; 1) Developer and Nurturer of eCulture, 2) Teacher as Networker and Change agent, 3) Teacher as an elearning practitioner, 4) eLearning resource Developer, 5) eTeaching-learning Strategist and 6) Action researcher. The optional papers are; Manager of eEducation and Tech-mode methodologist. The duration of this programme is two years.

Course Genesis

The inception of this programme design began with a brainstorming session, wherein the team enlisted the competencies required by a teacher in prevailing schools conditions. During this process, there were even contemplations regarding the definition of the term competency, which was subsequently operationally defined. The derived comprehensive list of competencies was next categorized on the basis of their similar roles they lead to. The roles that emerged from this process, lead to the genesis of the different courses for this programme.

With respect to the course: *Teacher as net worker and change agent*, while glancing at the comprehensive list of competencies elicited during the brainstorming session, it was unanimously felt by the team that one category of the competencies that emerged were closely associated with society. It was further realized that with the advent of globalization, the term 'society' would imply society at both local and global level, thereby implying that the role of a teacher can no longer be confined only towards school or its community, but must extent towards the global society. The roles of a teacher that gradually surfaced during our deliberations were that of a global worker and change agent. Hence, it was decided to introduce a course on this background, which originally was titled as "Teacher and education in Global society". It may be important to mention here that after operationalising this course in terms of its learning outcomes and scenarios, it became more prominent that the two actual roles of a teacher in this context are that of a net worker (working in a networked environment) and a change agent. It led us eventually to retitle the course as "Teacher as net worker and change agent".

Eliciting learning outcomes: Relearning experiences

Defining learning outcomes has been a vigorous relearning experience while designing this programme. It was also an interesting as well as challenging, since as the focus of the course kept shifting, the learning outcomes kept varying. As earlier mentioned, this course began with its focus on ‘teacher and education in global society’. Hence, at that stage, it was considered essential to introduce the learners on the theme of globalization and its impact on education. With this grounding, the following outcomes were elicited;

Impact of globalization on e-education

1. To **recognise** the pros and cons, and implications of globalisation on e-education
2. To **identify** and **undertake** different roles in context to e-education.
3. To **promote** the usage of e-learning materials.
4. To **initiate** and **participate** in e-based Life Long Learning activities for different groups

Role of e-education in development

1. To **convey** the effective role of e-education in the development of global society.
2. To **participate** in the process of enhancement of knowledge based society.
3. To **develop** appropriate models of e-education for the enhancement of society.
4. To **create** and **implement** sustainable development e-activities in the context of globalisation.

Working with networked system of education

1. To **participate**, individually and in group activities in virtual network of e-education

The above learning outcomes clearly projects inclination towards choosing content or knowledge based outcomes rather than functional skills. Further, the terms or concepts like Life Long learning, sustainable development, knowledge based society, models of e-education raised several queries especially with respect to their definitions and assessment criteria. Also, these learning outcomes did not clearly specify the roles they aim at attaining. Hence, the above learning outcomes were reanalyzed and re-

categorized according the roles that surfaced thereafter: a) Teacher as a net worker and b) Teacher as change agent. These learning outcomes although seemed appropriate at the initial stages, as we advanced, it became conspicuous that the learning outcomes were not related to the focused roles. In other words, the learning outcomes did not facilitate the performance of the elicited roles. It is at stage, wherein finally we were compelled to break away from the knowledge related outcomes and anchor towards performance based outcomes. Hence, the learning outcomes that we eventually settled to were;

1 Teacher as a net worker

1.1 Identify opportunities for networking in a global society.

1.2 Develop strategies for working effectively in a networked environment

1.3 Participate individually and in-groups in virtual networked environments.

1.4 Promote the use of networks in sensitizing and enhancing knowledge, understanding and awareness of the society.

2 Teacher as a change agent

2.1 Persuade the use of contemporary information and communications technologies in education.

2.2 Promote the use of technology in the development of a global society.

2.3 Facilitate the use of ICT based activities in the promotion of social transformation.

Making a shift in this paradigm has been one of the enriching relearning experiences.

Building Scenarios: Behind the Scenes

Another challenging task for the team was building scenarios relevant to learning outcomes. At the preliminary stages although it seemed as a simple task, the intricate aspects of these scenarios were noticed, as and when, they were presented to the other course teams. From the series of our presentations and the kind of reactions obtained

from our fellow participants, it was evident that even though a scenario may seem realistic on one, it may not seem real to another. This disparity to some extent was attributed to the existence of context diversities, yet, efforts were taken to construct authentic scenarios, wherein the narrations were related to realist context and most important were also generic. For instance, using names of cities, countries or schools were avoided and instead generic terms like city, rural area, private school etc were adopted. Further, to make the scenarios impressive, captivating titles were given to them to each of them.

Illustration;

Why networks?

Asha is a qualified teacher and today is her first day in school. She is enthusiastic about interacting with her new batch of students. She enters her class with a broad smile and as she glances at her students, she is astonished to see that some of the benches in the class are vacant. However, she introduces herself to the students and takes their attendance. During this process, she realized among the given strength, ten percent of the students were absent in the class.(contd).

To confirm, the linkage of this problem to the water pollution, she enquires from the medical practitioner regarding the cause of students' illness. She confirms that there is an epidemic of gastritis especially for those residing in the riverside area.

Apart from narrating authentic events, the other milestone we crossed was terminating these scenarios with a precipitating event, which is a critical aspect of a scenario. To involve the learner in the given narration, it is essential to problematise the scenario in order to enable the learner to undertake the appropriate role and resolve the problem. It is presumed, as most of us were habituated by conventional approach, wherein attention was largely given to results of knowledge, rather than on the conflicts that led to these results, evolving precipitating events did not seem easy. The below illustration demonstrates the refinement made in the scenarios as progressed.

Realising that the seriousness of this situation, she feels the need to sensitize awareness towards water pollution among the students as well as this problem with the different concerned sectors of society. However, she is not aware about the kind of networks she should create to disseminate the necessary information to prevent and control the spread of this epidemic. (First draft)

Realising the seriousness of this situation to school attendance, Asha feels the need to develop awareness among her students and the society about the impacts of water pollution. She is aware that in order to do this she must network effectively with students, their parents and other key community stakeholders. However, she is not aware of any such existing networks that she can readily use. She is unsure about who to contact and how to disseminate the necessary information to prevent and control the spread of this epidemic in the school and the community.

Your Role: *To help Asha identify opportunities for networking with stakeholder groups in the community. (Revised draft)*

Learning activities: Assessment Parameters

Learning activities in a scenario-based design are effective only when they succeed in demonstrating the desired learning outcomes among the learners. Keeping in view the aims of this programme, the following parameters were established for the development of learning activities; context based, sequenced appropriately, enabled demonstration of skills, facilitated learners to critically reflect and participate in collaborative learning. Defining learning activities that fulfill the above criteria has not been an easy task for most of us, for the reason that e-learning environment was still not a reality. Hence primarily, most of the activities designed focused on knowledge acquisition rather than skill demonstration. The kind of development taken is evident from below sequence of revisions.

First attempt

1. Write an assignment on the skills required to work effectively in a network group that is real?
2. If you are given a task by your school authorities to develop networks what kind network would you create?
3. Write an assignment on the skills required to work effectively in a network group that is virtual?

4. If your school undertakes an initiative to form a network system virtually, how would help them in setting this network?

Second Attempt

Form a Network: Visit the online discussion board of this course. A list of interest categories such as: Literature, Arts, Environment, Music, Sports etc are displayed. Select the interests of your choice and your name will be displayed under the selected category. (You can select more than one category). Your task is to start a group discussion of any selected interest of yours. For this purpose, you will have to invite friends to join your group.

Third Attempt

Visualizing Networks

Identify the different kinds of groups within the local in the community you would form to network in order to disseminate the above information.

Designing Networks

Watch the following video about a disaster. You are disturbed and concerned about the life of the people and hence you want to do something to help the people involved. What are the different kinds of virtual networks you would form to provide services for the people who experienced this disaster?

School Networking

Visit any school nearby your locality or to the school allotted to you for practice. Arrange to meet with a few teachers and students of any class from this school and identify the kind of network activities with which the schoolteachers and students are engaged. Also, on the basis of the views of teachers and students, identify other kinds of network groups that can be initiated in this school. Write a report on your visit and describe the kind of network patterns operating in this school.

From the above sequence of learning activities, the progress is evident and also ascertains that the activities formulated are closely related to the learner's context, facilitate critical reflection and most important a hierarchy is maintained in task levels.

Summary reflections

Development of this programme was a challenge to each one of us involved in this joint venture. Most of us had to first unlearn and then relearn concepts in order to develop this innovative programme. This led us gradually to completely revise our course content and our goals became more transparent. For instance, although we initially began

our focus on 'Teacher and Education in global society', after vigorous exercise, we shifted our focus to 'Teacher as a net worker and change agent'. A shift in our focus by itself makes explicit that the programme objectives are pragmatic and the content has more relevance to prevailing work situations. Furthermore, to ensure that the students internalize and participate in the learning process, adequate learning opportunities are provided to the learners to exercise their reflective and critical thinking faculties as well as involving them in co-operative and collaborative activities. Scoring guidelines for performance assessment are also provided to the learners in the form of a self-assessment checklist, to enable them to be aware of the level of performance desired. Being a distinct experience, at the preliminary stage, several apprehensions did rise within the team, however, today after the complete designing of this programme, most of our apprehensions have faded away. Also, after examining the success of the earlier efforts undertaken to implement this learning design, it is strongly felt that this programme would certainly be effective in achieving its goals. In support to this design, Snyder, Farrell & Baker (2000), reveal that the instructional design approach based on cognitive apprenticeship has been notably successful in acquisition of new skills among the project executives. Participants in the workshop quickly adopted the habit of thinking about problem-solving from a strategic perspective (that is, identifying the processes and strategies needed to solve customer problems and using reflection and exploration techniques before identifying a solution). Similarly, Keller and Bonk (2005), claim from The Teacher Institute for Curriculum Knowledge about the Integration of Technology (TICKET) experiences that teacher professional development programmes based around the tenets of the situated perspective, are effective in changing teacher practice, especially

in the area of technology integration. Wilson (1995), also offers several recommendations for practicing Instructional Design (ID) from a situated/constructive perspective. He indicates that some of the traditional ID projects did not succeed as they laid more emphasis on the design of systems rather than meeting the needs of identified groups of practitioners. On the other hand, a situated approach to ID would be more sensitive to local conditions in prescribing both methods and outcomes for instructional design. With this view, we look forward to launching this programme and anticipating that this joint venture of I-CONSENT would contribute towards the qualitative improvement of teacher education programmes.

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