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Introducing ICT into Teacher-Training Programs: Problems in Bangladesh

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Abstract
Information and Communication Technology can offer more adaptable and efficient ways of teacher training for improvement of quality of professional development programs. But the use of ICT into teacher training usually faces certain obstacles. In this paper, we identified different barriers of introducing ICT into teacher training model (this model had been discussed by the authors in a separate paper, titled as "A model for integrating ICT into teacher training programs in Bangladesh based on TPCK) in Bangladesh, a developing country. We then described the strategies to overcome these problems for improving the current status of ICT integration into teacher training. Finally, we concluded with emerging research issues and offered pertinent recommendation with respect to ICT integration into teacher training program for improving quality of teaching in Bangladesh.
Keywords: ICT integration, Teacher-training, knowledge and skill

1. Introduction

Information and communication Technology (ICT) has become, within a very short time, one of the basic building blocks of modern society (Clement, 2007). There are many countries that have recognized the necessity for changing teachers' roles through ICT and have taken action by the launch of many professional development programs to train teachers to using ICT. This would allow teachers to gain access to new knowledge and skills, improved educational resources, and overcome the traditional isolation of teachers and create individualized training opportunities (UNESCO Bangkok, 2004).

In spite of these greater impacts of ICT in Education, most of the teachers in Bangladesh use ICT for administrative tasks. They most often use ICT for 'routine tasks' (record keeping, lesson plan development, information presentation, basic information searches on the Internet). It is the belief of many teachers that the introduction and usage of ICT for teaching and learning situations would be time consuming for the teachers. Not many teachers in the big cities of Bangladesh are comfortable with the idea of using variations of ICT resources, and this limited amount of confidence acts as a barrier in conducting their lessons with ICT. Many teachers are still unsure of using ICT, and so this makes them unwilling to use ICT in their teaching.

In order to improve this situation, emphasis should be given on improving teachers' ICT skills which mainly depend on teacher-training programmes. In Bangladesh, most of the teacher training programmes have not been successfuldue to several barriers on it(on what?). The aim of this paper is to present the possible obstacles of introducing ICT into teacher-training program in Bangladesh. It is an extension of the authors' previous paper where a proposed model had been introduced for integrating ICT into teacher training programs, based on TPCK theoretical framework. Therefore, this paper is primarily focused on problems in relation to implementing proposed training models. This study will put forward possible suggestions for eradicating these barriers so that ICT can be effectively introduced into teacher-training program in Bangladesh. It is hoped that this paper will be useful for the educators, policymakers and other decision makers who are directly involved in teachers' professional development program for introducing ICT in Bangladesh.

Problems of using ICT in Teacher Training Programme in Bangladesh

To find out the problems first of all it is needed to identify the factors necessary for implementing ICT in education broadly. The Access, Competence and Motivation model (ACM model) (Viherä and Nurmela, 2001) can be used to find out the problems in implementing ICT in teacher training.

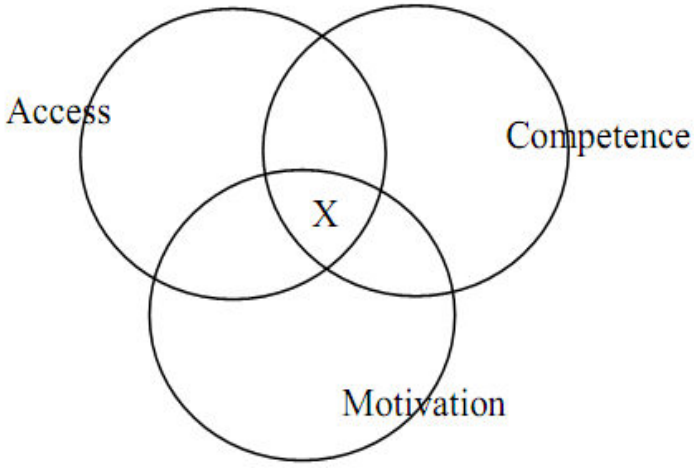

Fig 1: The Access, Competence and Motivation model (Viherä & Nurmela, 2001).

Viherä & Nurmela represented the area 'X' as Communication Capability because according to the view of Enochsson and Rizza (2009), effective communication can only be possible once there is access (to digital equipment), competence (in using software, and applying it for teaching purposes) and motivation (gauged through the attitude that using ICT result in significant benefits) and they represents 'X' as the ideal use of ICT in teaching.

To increase competency, ICT teacher training can take many forms. The lack of specific technology knowledge and skills, technology-supported pedagogical knowledge and skills, and technology-related-classroom management knowledge and skills has been identified as a major barrier to technology integration. Lack of specific technology knowledge and skills is one of the common reasons given by teachers for not using technology (Snoeyink & Ertmer, 2001/2; Williams, Coles, Wilson, Richardson, & Tuson, 2000). Teachers can be trained to learn how to use ICT or teachers can be trained via ICT. ICT can be used as a core or a complementary means to the teacher training process (Collis & Jung, 2003). Ailing and Nan Wang (2011) also structured ICT into two parts, one is the skill in ICT and the other is the capability to using ICT in teaching, such as planning, teaching, assessing and evaluating through ICT.

Bétrancourt (2007) claims that there is no correlation between students teachers'technological competencies and their pedagogical use of ICT. Whether teacher trainers have competences in computer science or not does not make a difference in their pedagogical representations regarding the use of ICT, but it has an impact on the probability that they will integrate ICT in their practices. But Twidle et al. (2006) found that student teachers are unprepared to use ICT for pedagogical practices because of the students' lack of operational skills. Teachers have to know how a computer or other technical devices work to be able to use them, but isolated workshops or conferences are not enough to establish a real change concerning the integration of ICT in classrooms (Enochsson and Rizza, 2009). So for effective integration of ICT in teacher training demand easy access, adequate competency and positive attitudes towards ICT .

Knowledge and skills of Teachers

In addition to the lack of technology knowledge and skills, some teachers are unfamiliar with the pedagogy of using technology. According to Hughes (2005), teachers need to have a technology-supported-pedagogy knowledge and skills base, which they can draw upon when planning to integrate technology into their teaching. Thus, in a technology-integrated classroom, teachers need to be equipped with technology-related classroom management skills such as how to organize the class effectively so that students have equal opportunities to use computers, or what to do if students run into technical problems when working on computers (Hew & Brush, 2007). In spite of lack of knowledge and skills teachers do not show their willingness to under go teacher training to improve their knowledge and skill. Moreover, those teachers have already got training; they are not even motivated to implement in their teaching situation.

Sufficient funds

Any innovation in training needs funds for implementation. In order to improve the quality of teacher training by integrating ICT is not apart from that. Such training programme requires huge funds which some times very difficult to allocate / manage by the developing countries like Bangladesh. Teacher training related with ICT integration requires lot of funds not only for computers but for creation ofadditional infrastructure and employing trained people. Therefore, unless sincere support is rendered by the community the scarcity of funds

would be a great obstacle.

Lack of proper attitude and beliefs

Teacher attitudes and beliefs towards technology can be another major barrier to technology integration (Hermans, Tondeur, Valcke, & Van Braak, 2006). Specifi- cally, teachers' beliefs may include their educational beliefs about teaching and learning (i.e., pedagogical beliefs), and their beliefs about technology (Ertmer, 2005; Windschitl & Sahl, 2002). Ertmer (2005) argued that the decision of whether and how to use technology for instruction ultimately depends on the teachers themselves and the beliefs they hold about technology.

Over least years due to commercialization of Education, the opportunities of earning extra money through tuitions has been increased a lot. While on the other hand, success of all teacher-training require self initiative and self motivation to improve their ICT skills. Therefore, teachers are not showing much interested on under go teacher-training. More over most of the teachers put up with negative attitude towards integrating ICT into teaching-learning. Research found that in a program focusing on information and communication technologies in schools, failed to see the value of such technology for their students. Although they had seen the power of the computer in other areas, they were unconvinced that it could help in education. (Karagiorgi, 2005).

Lack of Resource Persons

Dream of integrating ICT into teacher-training would not be a reality if we do not have sufficient number of trained resource persons. As ICT integration into education is very new concept in our country, we are indeed lack of trained /expert resource persons who make the training programme effective. Due to lack of appropriate resource persons, most of the training programme could not even achieve their objectives.

Affordability

Bangladesh, a developing country, has to accommodate or adopt technology for the sake of development. But it is now a big question whether it will be able to economically, culturally, socially or politically afford a globalised system of education. This may lead to two scenarios. On the one hand, if knowledge is to be imported from developed countries at a high cost, it will place strains on the budget of the dependent country. On the other hand, if knowledge costs less to produce than in the country to which it is imported, then knowledge will be colonised. This, in effect, means those who control or provide technology—will take control of aspects of the host country. Thus education will be merchandised in the global 'market economy' like other commodities. A great number of people in Bangladesh is poor,they cannot afford technology for their benefit.

Appropriateness and Acceptability

It is becoming clear that a cost-effective, flexible and dynamic system of education is needed to meet the growing educational needs of the society. Obviously, educational development is dependent on the invention of new technology. It is now widely recognized that no single medium can be effective for all kinds of learning needs. Each technology has its own strengths and weaknesses. One medium may serve a teaching function better than another in a particular area, and culture and learners may have different preferences for the technology to best learn with. The socio-economic and cultural background of a person influences their ability to learn from different media technology.

There are a number of factors that need to be taken into consideration before deciding on the appropriate use of technology. According to Alam (2009), include availability and access, the unique pedagogic characteristics of each medium, instructional objectives, financial resources and personal resources. Use of new communication technologies requires trained manpower to design, develop, produce and deliver educational material. Few developing countries have adequately trained human resources for these specialised jobs. Most people working in educational technology are required to learn the job, and the occasional training courses organised by educational institutions often fail to equip them with the adequate knowledge and skills required to perform the job more effectively.

Social and development perspective

Most of the teachers in rural area in Bangladesh are not familiarized with ICT. They are not friendly with technology. They are habituated in a way that providing of education should be done in conventional mode. Most of the village is not under rural electrification. So the running of technology specially computer, television, audio-video conferencing is not possible. The female teachers in rural Bangladesh sometimes did not be permitted to go outside from their family to attend the literacy programme. The factors which discourage the illiterate women to attend the literacy training programme are: looking after her children, taking care of her family, poverty and ill health, social criticisms, religious barrier, lack of time and psychological factors or hesitation Alam (2009).

At present what should we do for improving the status of ICT in Teacher Training?

Policy and Management of Teacher Training on ICT

In the policy level the expectations from ICT training program must be defined clearly and this expectations must be variable with the changing technology and flexible evaluation procedure should be adapted to check the expectation meet at what extent (Enochsson and Rizza,2009). This is now a big question: "why is technology not used to the extent that could be expected?" Most of the developing countries like Bangladesh have the policy regarding the use of ICT in education system (Law, Pelgrum, & Plomp, 2008), but only a few countries have reached a stage where policy is really transferred into the educational system.

To ensure continuous training of teachers from pre-service teacher education to induction to in-service professional development, other training agencies should be mobilized and labour should be divided among them, with the MOE providing central coordination.(a)Professional development is more likely to succeed if continuous training of teachers is a built-in process and is offered as a benefit to them. (b).A centralized training administration system for all teaching and non-teaching staff is crucial to document and monitor professional development. Government should formulate policies for integrating ICT into teaching and learning and proper initiative should be taken for improving teacher training programme. More teacher training institutions should be open up and necessary budget should be allocated for effective teacher training.

Preparing trainers and resource personnel

It is really hard to keep the same pace with the advanced world from the ICT context because lots of parameters are working behind it. This gap creates a change in attitude of the student teachers as well as trainers compared to the developing countries. In Bangladesh People who were born in the latter 20th century grew up surrounded by digital technology and the Internet. Researchers have given these people different names depending on the scope of research like N-geners (Tapscott, 1997, 2008) Homo Zappiens (Veen, 2003; Veen & Vrakking, 2006), digital natives (Prensky, 2001), or New Millennium Learners (Pedró, 2008) are a few examples. Majority of students and teachers nowadays in Bangladesh do not belong to a digital generation where as a political agenda of the Government of Bangladesh (GoB) is to digitalise the country to step up "Digital Bangladesh". So, government should give all round support to prepare the student trainee teachers, trainers, resource personnel up to the standard of current technologicalrequirement.

The qualification of the trainee teachers can be well understood by TPCK framework (Mishra & Koehler, 2006). TPCK, at its most foundational level, is the intersection between the development of knowledge of subject matter (content), with the development of technology, and the knowledge of teaching and learning (pedagogy). This framework, on a more global scale, combines appropriately selected technology with content-based learning experiences and pedagogical approaches.

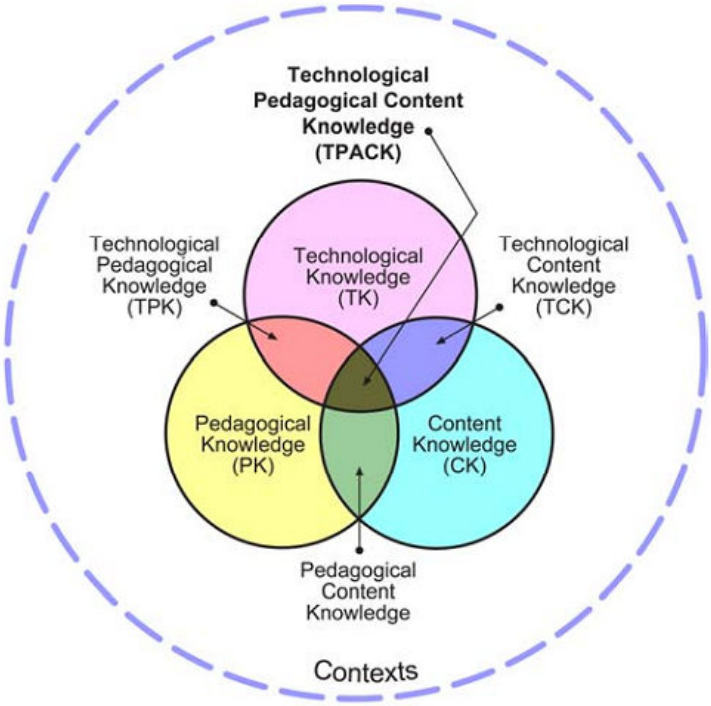

Figure 2: The components of the TPACK framework (graphic from TPCK - Technological Pedagogical Content Knowledge, 2010).

Baran et al. (2011) identified seven components in TPACK framework i.e. 1. Technology knowledge (TK), 2. Content knowledge (CK) 3. Pedagogical knowledge (PK) 4. Pedagogical content knowledge (PCK) 5. Technological content knowledge (TCK) 6. Technological pedagogical knowledge (TPK) 7. Technological pedagogical content knowledge (TPACK): Knowledge required by teachers for integrating technology into their teaching in any content area. Teachers, who have TPACK, act with an intuitive understanding of the complex interplay between the three basic components of knowledge (CK, PK, TK). The developing countries like Bangladesh can take a vision in their national policy to integrate TPACK framework in the teachers training module because Technology, pedagogy, and content-specific knowledge should be blended together to improve teaching and learning (Graham et al., 2009; Hakverdi-Can & Dana, 2012; Neiss, 2005). The authors elaborately discussed about how to incorporate this framework into teacher-training program in Bangladesh through another paper titled as "A model for integrating ICT into teacher training programs in Bangladesh based on TPCK" (in press).

In order to meat the present demand we have to give emphasize on preparing resource persons who can conduct training programme effectively. The workshop endorsed the value of using master-teachers as part of the main training strategy, and the aim is to prepare master trainers for project countries through regional workshops. Also, teacher directed training will help meet specific local needs. Development of a core group of external and local trainers in each of the functional areas could be useful and may prove to be an acceptable mode of training. Hybrid models that suit local needs may also be encouraged. Multiple strategies and a blended approach that uses master-teachers, on/off-site training, school based training, face-to-face models, short/long courses, self-study and distance learning will work better where situations are more complex and diverse. The idea of advanced learning through action learning could also be tried out wherever possible (UNESCO Final Report-2003).

Introduce on line training for saving money and other barriers

Multimedia and multimodal transmission, while more expensive, is widely considered to be more effective. Furthermore, instruction that uses a range of formats, from video and CD, to printed materials and on-screen delivery covering prescribed curricula could well be beneficial. Online training using web technology, which is flexible and easy to revise, may be more useful for lifelong education and training. This mechanism can be useful for servicing more remote schools, and can even help teachers to connect with colleagues and other schools through online networks, and thus create an environment for building local capacity in the use of ICT, and may also help teachers to better serve their community. Teachers will thereby be able to further increase their own capacities to develop local teaching materials. This can also then act as a focal point for further in-service development. Single-tier programmes using a satellite/mass media/stand-alone approach are also considered to be simple and convenient (UNESCO Final Report-2003).

Incentive System and Motivational Strategies for Teachers

Having a recognition system for innovative and effective use of ICT integration in schools will motivate teachers to use ICT in teaching. Formal certification of in-service professional development that leads to diplomas or degrees could provide an incentive for teachers to upgrade and update their skills in and knowledge of ICT integration. Teachers' interest in using ICT after their training is more likely to grow if they are provided with computers, training materials and software for classroom use. Incentive and motivation directly help teachers to change their negative attitude towards ICT integration into classroom.

Providing professional development through Teacher training

Professional development can influence a teacher's attitudes and beliefs towards technology (Shaunessy, 2005; Teo & Wei, 2001); as well as provide teachers with the knowledge and skills to employ technology in classroom practice (Fishman & Pinkard, 2001). The effective professional development related to technology integration: (a) focuses on content (e.g., technology knowledge and skills, technology-supported pedagogy knowledge and skills, and technology-related classroom management knowledge and skills), (b) gives teachers opportunities for ''hands-on'' work, and (c) is highly consistent with teachers' needs. First, focusing on technology knowledge and skills is clearly important because technology integration cannot occur if the teacher lacks the knowledge or skills to operate computers and software. Snoeyink and Ertmer (2001–2002) found that teachers did not see the value of technology integration until they had developed basic skills such as logging onto the network and basic word processing.

Integrating Technology in the Curriculum and Assessment

A well-designed teacher-training program is essential to meet the demand of today's teachers who want to learn how to use ICT effectively for their teaching. However, to provide proven strategies to design effective ICT

teacher training programs, we need empirical research in the use of ICT for teacher training and professional development. Karsenti and Grenon (2002) claim the student teachers' use of ICT in their future teaching strongly depend on representations and practices of teachers they meet during their field placements and training.

When teachers perceive ICT as a tool to meet curricular goals, they are more likely to integrate ICT in their lessons. Teachers play a pivotal role in the integration of ICT in the school curriculum and assessment. When ICT is introduced into the assessment process, there is a need to reconsider the assessment approaches that must be incorporate in the teacher training module.

Teachers must also come across evaluation to check the computability. Ailing and Nan Wang (2011) indicates on there main aspects of evaluating teachers. One is the skills in using traditional media, computer and web as base for ICT utilization. Another, as the key part, is the capability of using ICT in teaching. The last one is the attitudes toward the utilization of ICT in teaching and it directly decides whether teachers utilize ICT in instruction. Formative evaluation will help teachers greatly in shaping these three aspects.

It is also observed in the analysis that a variety of ICT-integrated training environments have been created to provide more effective ICT training. As indicated above, teachers tend to integrate ICT in their teaching if they experience ICT skills as a learner (Collis & Jung, 2003). Teacher training approaches in this paper show that many cases adopt ICT into their training process not just as content of the training but rather as an integrated training environment and thus allow teachers to experience ICT-based pedagogies.

Teacher training approaches need to adopt cost-effective strategies. Most developing nations have limited resources for teacher training and must make decisions based on cost-effectiveness. Several strategies can be followed to minimize the cost like effective scheduling i.e. maximum use of the ICT equipment and accommodation. Outside training hours, open computer labs to the trainee teachers for a small fee. Web-based resources and training materials could be shared with other training institutions.

During the training program student teachers could also be given some familiarization on different communication Medias that can facilitate interaction between student and teachers. Different mode of communication could be possible even by the open source media to minimize cost. Moodle (Open source ICT platform), social networking sites, in particular Facebook, email, instant messenger could be of different form of communication between students and teachers. (Hoeppner, et al, 2009).

Conclusion

In recognition to the importance of ICT in teaching and learning, many countries in the world – including Bangladesh – have provided teacher training based on ICT with a variety of forms and degrees. Although there have been many comments from teachers stating that they have not received adequate training to allow them to effectively use technology in teaching and learning. In order to improve the standard of education in Bangladesh, many strategies that have already been proposed need to be carried out to eradicate the problems mentioned above. Future studies upon the investigation of an application level of long-term effectiveness or cost effectiveness of different ICT teacher training programmes (Jung 2005) and also monitoring during and after the trainings should be conducted. Finally, research should be carried out to see the impact of ICT in teacher-training programs.

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