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Using technology for enhancing teaching and learning in Bangladesh: Challenges and consequences

Introduction

There are many challenges and problems regarding the introduction of technologies for enhancing teaching and learning in technology-poor contexts. Often a range of interrelated issues is involved – economic, technical, socio-political, attitudinal, pedagogical – and need to be addressed simultaneously. Faced with the need to rapidly expand and improve educational provision, governments and donor agencies often look for technological solutions. As countries in the Global South strive to achieve the UN Millennium Development Goals (UN, 2010), many projects have attempted to exploit the potential educational benefits of information and communication technologies (ICT).

[This article focuses on factors relating to the use of technology to support school-based professional development for in-service teachers.](#) We look at an early stage in the development of one project – English in Action, Bangladesh – and examine the challenges and difficulties associated with using technology to aid [English language learning](#) in a specific context. In particular, we draw upon the experiences of secondary school teachers as they endeavour to enhance their teaching and learning practices.

Current debates

While many projects have introduced ICT for educational purposes in developing countries, the effectiveness and sustainability of those projects have tended to be limited. Considerable practical problems have been encountered, including poor infrastructure, inadequate technical support and insufficient training for users (Morales-Gómez and Melesse 1998; Trucano 2005). Moreover, a review of e-learning in developing countries concluded that many projects, although well intended, had resulted in “furthering the gap between rich and poor, rural and urban, and between genders” (Gulati 2008, 12). In Bangladesh a recent review by

PricewaterhouseCoopers (2010) found that most technology for education initiatives had focused on providing ICT as a subject at secondary school level. It recommended exploring more extensive use of technology to aid the development of *quality* education. In other words, rather than concentrating on ICT as a subject of study, technology should also be used more widely as a tool to enhance teaching and learning. This supports experiences in other countries where projects have focussed on teachers' professional development and with the local contexts and needs being addressed. In such circumstances, technologies can have a significant role to play in educational development in the Global South (Banks 2009; Banks, Moon and Wolfenden 2009; Onguko and Ngata 2010; Unwin 2005).

While there is potential for technology to contribute to the teaching and learning of languages, questions have been raised about some of the claims made about their effectiveness (for example, Salaberry 2001; Milton 2002). Nonetheless, there are numerous examples of good practice involving the use of recorded media (i.e. audio visual CDs and tapes), particularly when these provide samples of 'authentic' language for communicative purposes. It has been suggested that language learning is a discipline particularly likely to benefit from widespread ownership of mobile devices such as third generation mobile phones and media players (Kukulaska-Hulme 2009). The potential of mobile media players (e.g. the Apple iPod) has only recently started to be explored (Shohel and Power 2010).

There are arguments and counter-arguments as to whether or not it is appropriate to deploy technologies for educational purposes in the technology-poor contexts of the Global South (Dhanarajan 2001; Leach 2008). Nonetheless, many governments and international non-government organisations (NGOs) are investing in a variety of ICT-enhanced educational projects (Leach, Ahmed, Makalima and Power 2006; Pouezevara and Khan 2007; Power and Sankale 2009). In a country like Bangladesh, where electricity is both unreliable and still not available to more than 30% of the population (UNESCO 2008), there are many practical difficulties associated with using technology for education. The majority of the population, who live outside the main metropolitan centres, is poorly served in terms of information and communication technology (English in Action 2009a).

However, while relatively few people have a landline telephone connection, mobile phone networks have developed rapidly and there is widespread access to simple mobile handsets: there were 68.6 million subscribers in 2010 (International Telecommunications Union 2011). Mobile technologies offer greater flexibility and have less dependence on the power infrastructure. Such devices can be charged through solar power systems or lightweight generators. In situations where no power supply exists, mobile devices can be charged at a nearby peri-urban location, which might have electric power systems or generators (Leach, Ahmed, Makalima and Power 2006).

Context of the study

Two contexts are of particular relevance to this study and are described in the following sub-sections.

The English in Action Project

English in Action (EIA) is the longest running educational development programme in Bangladesh at the present time. [Funded by UKAID \(the Department for International Development\)](#), the project responds to a request from the Government of Bangladesh. EIA is a large, multi-faceted project involving a range of international partners, including the UK Open University and the BBC World Service Trust, as well as organisations based within Bangladesh (see www.eiabd.com). The goal of EIA is to “contribute to the economic growth of Bangladesh by providing English language as a tool for better access to the world economy” (English in Action 2008, 5). This is being addressed through educational initiatives operating in three sectors – Primary, Secondary and Adult.

[In association with the appropriate education Ministries and authorities in all six administrative Divisions, the EIA](#) school-based interventions involve supported open learning (SOL) and use media technologies and materials to increase motivation and to improve access to resources [to assist in the realisation of the communicative aspects of the national English curriculum](#). Crucially, the EIA interventions also have the objective of enhancing and extending the existing learning and teaching practices throughout Bangladesh, [building upon earlier teaching quality enhancement projects](#).

EIA needs to work with and take into account the realities of the current educational environments within Bangladesh.

English is a core part of the school curriculum at both primary and secondary levels. However, there are concerns that the communicative aspects of the national *English for Today* curriculum (i.e. the linguistic skills necessary for effective communication with other people) are not being implemented successfully (Chowdhury and Ha 2008; Hamid and Baldauf 2008; Hamid, Sussex and Khan 2009). Observations of English lessons (English in Action 2009b) indicated that classes are predominantly teacher-led with students having limited opportunities to practice communicative use of the language. As all school students learn English, EIA is not concerned principally with getting more people to learn English. Instead it focuses on largely qualitative changes; that is, better communicative use of English achieved through improved teaching and learning practices. Research and evaluation to determine the effectiveness of EIA interventions needs to provide evidence of such changes (Kirkwood and Rae 2011).

A team from the Open University UK is involved with the school-based interventions (primary and secondary) and with evaluation of the project. The study reported in this article concerns the EIA Secondary Teaching and Learning Programme (STLP), which involves two interrelated aspects

- audio recordings supported by printed resources for use in English lessons, and
- audio, video and text materials prepared to develop the classroom practices of teachers, particularly in relation to promoting a communicative approach to English language.

Overall, it provides teachers of English in Bangladesh with professional development opportunities by offering training in the preparation and use of resources and classroom materials, so that they can enhance their own teaching skills and bring new ideas into the classroom. Teachers are given a digital media player – an Apple iPod Touch – together with loud speakers that can be used in a classroom, so that pupils can listen to specially prepared podcasts and other audio materials. The audio materials are used in conjunction with the school textbooks and other supplementary learning materials such as posters and flash cards prepared as part of the EIA project.

The EIA pedagogical approach is to promote a carefully structured, enjoyable learning environment where pupils are engaged and motivated to explore the wider world without fear (for more detail, see Shohel and Power 2010).

The SOL approach means that in addition to the EIA resources on and accompanying the iPods, individual teachers also receive support from other participants in the locality, a local mentor and, occasionally, an EIA Teacher Development Co-ordinator (TDC). The team of TDCs are central to the implementation of the EIA intervention. They have been trained by the Open University EIA team to develop the local mentors and train the teachers.

For teachers in Bangladesh most in-service development opportunities involve removing individuals from their work environment and there is little experience of supported open learning for school-based professional development. Resources that could be used to promote teacher development (such as professional periodicals, journals and videos) are not accessible within most schools (Hoque, Alam and Abdullah 2010). Further, there is generally no culture of collaboration, mutual support and sharing of professional experiences among secondary teachers (Thornton 2006). Baseline research for the EIA project found that few teachers and students have experience of using audio, video or computer-based materials or resources for learning and teaching (English in Action 2009c).

The first 'pilot' phase of EIA (to April 2011) included school-based in-service teaching and learning programmes for teachers in each of the primary and secondary sectors. Before the programmes were fully launched in Government and other schools across Bangladesh in 2010, arrangements were made for a limited 'pre-pilot' version of the Secondary Teaching and Learning Programme (STLP) to operate in fifteen schools run by an EIA project partner, the Underprivileged Children's Educational Programs (UCEP). [It was an experiential learning process as UCEP schools were treated as 'test-bed' for the mainstream pilot phase of the project \(Shohel and Banks, 2009\). Participating UCEP teachers were trained through cluster meetings run by the EIA Teacher Development Co-ordinators \(TDCs\). However, it was very important to develop an understanding of teachers' professional development during the pre-pilot phase \(July 2009 – June 2010\) of the project before starting the countrywide pilot phase.](#)

The Underprivileged Children's Educational Programs

The Underprivileged Children's Educational Programs (UCEP) is a non-government organisation (NGO) in Bangladesh that provides general education and vocational training for working children. Currently over 30,000 poor working children, who have generally missed out on their primary education, are studying in UCEP schools. Students are accepted into the programme no younger than age 10 for girls and 11 for boys. UCEP schools operate 3 shifts per day, each of 3 hours duration. As the children continue to work and earn while they attend school, this allows a child to choose a shift of his/her convenience, in consultation with their parents, to minimise the economic loss to the family due to the children attending school.

Each 3-hour shift focuses on general education, but where possible examples are drawn from a technical context. For example, the English alphabet is taught through naming of craft tools, for example D for dividers, H for hammer. Stories in Bangla (mother tongue) are linked to the discovery of inventions and the use of agricultural and other devices. After grade 8 UCEP continues Technical Education training for 16 professional trades (see UCEP 2008 for more detail about these trades).

Students basically follow the curriculum of the National Curriculum and Textbook Board, both at primary (grades 1-6) and lower secondary level (grades 7-8). However, the UCEP curriculum has been abridged in a careful manner so that it remains comparable with that of the mainstream national curriculum. The UCEP curriculum comprises Bangla, English, mathematics, vocational, social environment and hygiene. Students learn in a highly vocational and practical way, using English where necessary as technical vocabulary. At the end of their training students are guaranteed a job. In contrast to [students in Government schools](#), these poor working children attend school regularly and complete their education. The attendance rate is over 94% and the dropout rate is very low (UCEP 2008).

Normally a teaching qualification is not needed to become a teacher in a UCEP school. Teachers get some basic and subject-based training immediately after their recruitment (Howes, Grimes and Shohel 2011).

Methodology

To evaluate the EIA pre-pilot intervention of the ‘Secondary Teaching and Learning Programme’, a mixed method research strategy was adopted. Data was collected by means of a questionnaire survey, classroom observations and semi-structured interviews with school administrators¹ (SAs), teachers and students.

The questionnaire was administered during an orientation workshop held at the launch of the pre-pilot intervention. This provided quantitative data and enabled the study focus to be narrowed down following primary analysis. Fieldwork for the collection of qualitative data through classroom observations and semi-structured interviews was carried out during August and November 2009. The first author and two Teacher Development Coordinator (TDC) colleagues visited UCEP schools in several locations in Dhaka, Bangladesh for this purpose. All interviews were conducted in Bangla and were recorded, [transcribed and translated into English by the professional Bangla speaking translators](#). The verbal consent of the research participants was obtained before recording the interviews and using the data for research purposes.

Six out of fifteen EIA pre-pilot intervention schools were selected randomly for the study. At each location the school administrator, two teachers involved with the pre-pilot intervention and eight students were interviewed. The school administrator was interviewed regarding school policy, teacher recruitment and training processes. Data derived from classroom observation was fed into subsequent interviews with teachers and students to generate rich interview data. The participating teachers were interviewed regarding their professional development and various aspects of school-based training support systems. Eight students from two grades were interviewed in two groups. To keep this article manageable, only the [teachers’](#) interview data is used for the discussion.

The discussion that follows focuses on the effectiveness of the school-based teachers’ professional development in UCEP schools achieved through technology-enhanced support systems. Analysis was conducted using grounded theory (Glaser and Strauss 1967; Strauss and Corbin 1990), in which the aim was to identify the key message that the teachers wanted to convey through the interviews. We intended to allow teachers’ voices to emerge. In the following section, we pull out some findings

regarding teachers' understanding of their professional development and we have used the following conventions for the presentation of the data:

- Extracts from the transcripts have not been edited; rather, whole paragraphs are presented intact so that the key points can be seen in the context in which they were made.
- With these extracts, the key words or phrases illustrative of the emerging theme have been highlighted in *italics*.
- Each piece of evidence is given a reference, e.g. [9], to indicate which teacher interview transcript is the source.

Findings and Discussion

In this school-based TDP intervention, the use of technology, especially the use of hand held mobile devices became powerful tools as a medium of open and distance learning. *Although this is very new in the context of Bangladesh and South Asia, it seems to offer great potential in relation to TPD. Such innovations will certainly bring something new to in-service teacher development in the resource-constrained context (Shohel and Banks 2010). Interview extracts shows the teachers' attitudes towards use of the iPod for their own professional and personal development. This is really interesting and relatively new in contexts such as these.*

Benefits of using hand-held mobile device with audio-visual materials

As a hand-held mobile device, the iPod Touch is playing a substantial role in this intervention for teachers' professional development. As one respondent said:

We get ideas about the methods used in the lesson from iPod. We also understand the teaching style and get the *classroom languages* from here. [1]

Materials on the iPod Touch, especially audios and videos, are impacting on teachers' personal and professional development. As one of the teachers said how it is helping him:

A complete lesson on choral dialogue is demonstrated in the iPod Touch. Watching that demonstration we've learned many aspects of choral dialogue such as style, rules etc. The demonstration contains both audio and video. [1]

One respondent said how materials on the iPod have advantages over printed materials:

After having a long day at school, we do not have the energy to read book. I mean, we lose interest for reading books that merely contains texts. Also the book would be in English that I might feel is not easy to read. On the other hand, the iPod is a new device that creates interest. Moreover, I like to listen from the iPod. So it is more fruitful for me. [1]

The hand-held mobile device has given the teachers freedom to use the resources in different ways that are suitable for them:

Actually at home I do not use it much. I use the iPod like a CD player. I run a module and listen to it while working at home. [2]

I listen the iPod while working, just like listening music. [2]

The iPod has a huge impact on teachers' personal language skills development specially making pronunciation correct:

When I recite poems in the classroom which is not in the iPod, I try to make the pronunciation as close to that as possible. And if the listening item is available in the iPod, then I use that. [2]

The audio files containing recited poems provided an opportunity for teachers' to follow and learn from them:

The poems are more helpful. These are pronounced more steadily and clearly, so I do not need to look at the text. I read the modules in between the class gaps sitting in a separate room. [9]

I watch the video that contains class instructions very often on the iPod. I try to follow the instructions given in the video. I try to follow the pronunciation and try to pronounce accordingly. And if I find any error in my pronunciation, I try to correct it by listening repeatedly the instructions. [2]

I listen to the song using iPod in the morning when I come to the school and in the afternoon on the way back to home from school. [9]

At home, I use the iPod only when my kids are asleep. I do not use it when they are awake because they want to play with it! [9]

I either listen audio or watch video in the iPod. I listen the pronunciation of each and every words, there are utter accordingly. I practice repeatedly so that my pronunciation becomes accurate. [3]

I usually use iPod when I am free during school hours or on they way to and from the school or in the house. I use it as often as I get free time. [3]

I can learn by myself. Without an iPod the pace of learning could be much slower. We've been studying English for whole life. But I did not know that English can be understood and learned in the way you (EIA) are teaching. [3]

I learned how the teacher is using gesture, how he is making gesture effective. I also learned how the teacher is making the class more effective by involving all the students. Had I not been given the video and audio, I would definitely miss learning of these techniques. [4]

As we see, video clips of good classroom practice impact on teachers' understanding of teaching and learning and of the communicative and participatory classroom approaches:

I like the teachers in the video. In my class, I try to follow the things of the teachers that I like. [2]

I try to follow more or less the style of the teacher whom I liked best [in the video]. [9]

Without video it would have been very difficult initially to understand activities of students and teachers in the classroom and how teachers are using gesture, which gesture students are picking up rapidly, continuity of lessons and how to use devices and so on. And audio is helping me to understand when to give which instruction, which dialogue or instruction to be used so that students can pick up rapidly etc. [6]

Teachers are also influenced by the good teaching practice and classroom behaviours demonstrated in audio-visual materials on the iPod Touch:

For example, I like their [teachers on the video materials] teaching style, gesture very much and I use those in my class. I also try to follow their 'going to pairs', movement, smartness. I do it because I think a teacher is the idol to be followed for students. So the teacher must represent herself in a way so that they can learn something. Therefore, I try to follow the appearance, behaviour, the speaking style of the teachers from the video. [2]

Previously, we just read and the kids weren't listening like they are listening now. When I use iPod, they become very interested and try to listen. And if we make the new words and keywords clear to them, they very much enjoy the listening. They got attracted to it. And if they understand, they become excited and keen to answer. I liked the technique very much. [9]

The iPod contains correct pronunciation of the words which I can follow. Now I can teach the students using a new method instead of traditional methods by selecting from a set of methods given in the iPod. It's also helping the students to increase their listening skill significantly. Because when they listen to iPod they are not using their books. Previously, I used to teach them using textbooks. [4]

When I read the book, sometimes I hesitate about the exact pronunciation of some words. Then I correct my pronunciation by using the particular lesson from the iPod. [4]

When I watch the videos, in most cases, I specially see how teachers are involving all the students in the class or how he is using gesture. In the cluster meetings we get resources, learn methods and how to conduct classes. I think watching is more effective than listening. For example, watching a movie is more effective than just listening to the story. Similarly, when I am watching a video of the classroom practice instead of listening only, it becomes more effective. [4]

If we were given printed books only, first I would miss listening. Because I could only read for a book, not listen. Hence I could not learn the correct pronunciation which in turn could refrain the students from developing their listening ability. [4]

As a multi-media player, the iPod has contributed to students' motivation during the lessons:

Actually, the materials which are in the iPod are more effective indeed. Students' response is lower to the lessons we do without iPod. [7]

Building confidence in using English in the classroom

It is essential for the teachers to build their confidence in using English in the classroom. Poor English language proficiency and lack of confidence to speak in English are the main barriers for most of the Bangladeshi secondary school teachers. The EIA STLP has created an environment for developing their English language skills as well as building confidence in using them in the classroom.

At the beginning of the intervention, I used to speak Bangla along with English. I think, now most of the students understand instructions in English. If I speak Bangla along with English, probably student's enthusiasm and attraction to learn English will reduce. In the beginning, I tried to explain in English as much as we could, sometimes with gesture. When I failed to explain [meaning of words in English], only then we spoke Bangla. But now I feel my students can understand instructions in English. I do not need to use Bangla any more for instructing my students. [4]

For example, the classroom language we are applying contains some easy words which we are learning and delivering to the students very easily. ... Even the students are easily guessing what we wanted to say or what we are saying. They are learning quite easily. [3]

Previously, I used to tell them Bangla meaning very easily. I used to write them on the blackboard and they took note. But after listening and watching those iPod lessons, I am avoiding those practices. English in Action methods are helping me to increase the student's response, to increase active participation with the kids in the class. [3]

However, 'building confidence in using English in the classroom' is one of the positive outcomes of the teacher development activities while 'teacher guide' and 'peer support' are probably factors that contributed to the success of the intervention.

Challenges and Consequences

Most technology for education projects in the Global South are likely to encounter difficulties of sustainability, in terms of both the costs involved and the technical support and infrastructure required. At the level of the individual user, there are some additional challenges for using mobile devices for teaching and learning in technology-poor contexts. Kukulska-Hulme (2009, 159) has mentioned the following three issues. *Ownership of the device* makes a difference for the user - When it is borrowed a device will not be used in the same way as when it is owned by the user; ownership provides more chances for experimenting and developing familiarity with the device. *Using multiple devices* gives learners an advantage over those who use just one, for example dealing with problems such as battery life and overcoming reliability problems. *Usability and scope of devices* different devices have different types of applications associated with learning.

In the case of the EIA Secondary Learning and Teaching Programme, participating teachers keep the iPod media players for the duration of their involvement and are free to use them as and when they choose. It is unlikely that any of the teachers in the pre-pilot phase had access to any mobile device other than a basic phone, but they would have developed local solutions for charging the batteries of the device and the associated loudspeakers. Technical support in terms of maintenance and updating was provided by EIA. The iPod Touch facilitate the use of audio, text materials, images and videos (all provided by EIA), but did not support the sharing of user-generated resources.

The participating teachers need to develop their technological skill, i.e. their knowledge of using iPod applications, both for individual use and in the classroom context. They must also develop organisational and time-management skills, so that they can use resources in their iPod whenever they have time and space for learning. EIA is helping teachers to build their confidence in using audio resources and new techniques for communicative language development in lessons. There are several challenges associated with this.

During the pre-pilot phase of the EIA project, participating teachers did not resist the intervention, because it was not about an external agency imposing technology to promote the learning of English language in Bangladeshi schools. English is already a

part of the compulsory national curriculum and that existing curriculum implicitly promotes a communicative approach to the language. The EIA project aims to provide resources and professional development opportunities to assist in the realisation of the oral and aural aspects of the curriculum – aspects for which almost all teachers have previously undertaken no training or development activities at all.

Classes in Bangladeshi schools tend to be large and teacher-led, whole-group activities predominate (English in Action 2009b). Prior to EIA it was unusual to find students practicing their language skills in pairs or small groups. The teachers' own proficiency in spoken English often limited their ability to act as a good role model when speaking to their students in English. Almost all teachers in Bangladesh (and most teacher trainers) learned English by means of the Grammar Translation Method, which emphasises reading and writing. However, they are now expected to teach English using the Communicative Language Teaching approach that gives prominence to speaking and listening (Hasan and Akhand 2009). The supported open learning approach of EIA is helping teachers to develop new skills and techniques that they can apply in their lessons without delay.

Conclusion

Teaching and learning is in transition in the era of mobile technologies. Technologies have extended accessible educational opportunities for the disadvantaged. Donor agencies have advocated the use of new technologies to reduce the cost of reaching and educating large numbers of adults and children who are outside of the existing educational systems in developing countries (Gulati 2008). However, 'cost' and 'reach' are not the only considerations when trying to improve the *quality* of educational provision (and/or the *quantity*). There is a need to formulate appropriate models for educational development and to consider the role that technology can play in supporting their implementation. Kukulska-Hulme (2009, 158) reminds us that "educational practice is not determined by technology. Neither is technology likely to be a determining factor in informal, everyday learning".

Mobile technologies can assist learners at the point of need and in ways that fit in with their lifestyles. It seems that within a supported programme the iPod can facilitate teaching and learning in a technology-poor context. Nonetheless, the lack of educational and technological infrastructures is hindering the potential of mobile

devices such as iPod to maximise teaching and learning. It still remains unclear whether or not the increasing power, affordability and availability of mobile technologies can be used to support the significant enhancement of teaching and learning activities in technology-poor contexts like Bangladesh.

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Note

¹ The head of a UCEP school is called the School Administrator, although the head of a school in the mainstream education system is called Headteacher.

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