Going digital on low-cost mobile phones in Bangladesh

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Abstract—Large-scale technology-enhanced teacher-professional development on mobile phones in emerging economies, like Bangladesh, is a promising field whose applications are context specific and largely absent from the literature. This paper reports on English in Action’s (EIA) use of mobile phones, audiovisual materials and portable rechargeable speakers to realize the goal of creating a ‘Digital Bangladesh’ inline with the democratic government’s ‘Vision 2021’, which targets the establishment of a resourceful and modern country through the effective use of information and communication technologies (ICTs).

Keywords—mobile phones; teacher professional development; multiliteracies; English in Action (EIA); 'Digital Bangladesh'; ‘Vision 2021’

I. INTRODUCTION

Examples of mobile phones enhancing teachers’ and pupils’ English language proficiency in developing economies like Bangladesh, is uncommon. This paper reports on how English in Action (EIA), a project designed to contribute to the growth of Bangladesh by providing English language as a tool for better access to the world economy, is using mobile phones in a large-scale teacher professional development initiative. We present findings that demonstrate significant changes in classroom practices through the use of mobile phones as part of a work-based teacher professional development program. We argue that incorporating mobile phones as a teaching and learning tool within a curriculum framework of multiliteracies, presents new opportunities for teachers and pupils to acquire English to levels that enable them to participate more fully in economic and social opportunities.

EIA’s work is closely aligned with the democratic government of Bangladesh’s Prime Minister’s Office’s philosophy of ‘Digital Bangladesh’ and ‘Vision 2021’. EIA’s approach demonstrates how mobile phones, as a tool, can challenge current assumptions around the use of mobile phones within large-scale international development projects. Our significant findings emerge from our own and independent classroom-based research, monitoring and evaluation in remote rural areas to demonstrate the potential of using EIA’s audio and video resources on mobile phones with lightweight portable rechargeable speakers.

II. ENGLISH IN ACTION (EIA)

English in Action (EIA) is a 9-year project beginning May 2008 and running through 2017. It was designed to assist 25 million people in Bangladesh improve their English language skills. The government of Bangladesh requested the project and it was then funded (£50 million) by the United Kingdom’s Department for International development (DFID). The project is an international partnership, led and managed by BMB Mott McDonald, The Open University (UK) and The British Broadcast Corporation (BBC) World Service Trust. Locally, EIA works collaboratively with organizations including the Underprivileged Children’s Educational Programme (UCEP) and Friends in Village Development Bangladesh (FIVDB).

EIA’s primary purpose is to raise Bangladesh’s economic and social profile by providing English language as a tool for the population to access global opportunities. In this paper we describe The Open University’s involvement in EIA which centers around targeted ICT-enhanced teacher professional development and the introduction of a variety of audio and visual learning materials using mobile phones, micro SD cards and portable rechargeable speakers. Paramount is how these materials resonate with the country’s English language curriculum and textbooks used in all government schools, entitled English for Today, published by the Bangladesh Textbook Board. The learning resources (print, audio & visual) were developed to improve 12 million pupils listening and speaking skills by providing audio, audio transcripts and visual resources to reflect content in the textbooks. Through face-to-face teacher professional development and self-learning modules on mobile phones, teachers learn how to use these resources in their individual classroom contexts by engaging in a pedagogy with four distinct elements: situated practice; overt instruction; critical framing; and transformed practice (The New London Group, 1996)

III. MOBILE TECHNOLOGIES AND DEVELOPMENT

Mobile technologies, particularly mobile phones, for teacher professional development and ELT teaching and learning are still an emerging field in developing countries. There are many notable case studies outside education that highlight their efficacy for entrepreneurial activity among
women in Bangladesh (Aminuzzaman, Baldersheim, and Jamil, 2003; Sullivan, 2007); economic development in relation to microenterprises in Rwanda (Donner, 2007); social innovations in health in Tanzania (Mulgan, 2006) and India (Biswas, 2009).

Currently there are a number of relevant studies and research where mobile technologies are being leveraged to improve people’s lives and education in Bangladesh:

- **Access to Information A2I Programme** at the e-Government Cell of the Prime Minister’s Office of Bangladesh supports the development of new projects and programmes for ICT for Development and provides technical assistance for monitoring and evaluation. This programme aims to prioritize and mainstream ICT into national development policies. It also assists in the development of a national e-Governance Vision and strategy that can harness digital opportunities for development in consultation with stakeholders by identifying emerging opportunities for ICT for development initiatives in support of national priorities in the context of Bangladesh’s national e-Governance Vision.

- **BBC Janala** an EIA partner project that works with BBC Learning English is a unique multi-platform project that harnesses multimedia technology to provide affordable English education to 17 million adult learners in Bangladesh. **BBC Janala** offers an innovative way of learning English on/through mobile phones, the internet and television. Being the first project of its kind in the world, it aims to provide high quality English learning tools to millions of people, many of whom live on less than £2 a day. **BBC Janala** allows users to dial “3000” on their mobile phone to access hundreds of free English language audio lessons and quizzes.

- **D. Net**, the Development Research Network is a non-profit organization dedicated to using information and communication technology (ICT) to improve the economic development of Bangladesh. D.Net’s overarching mission is to use ICTs for poverty alleviation, economic growth and peace. D.Net’s Computer Literacy Program (CLP) promotes the knowledge and usage of computers among underprivileged youth across hundreds of sites in Bangladesh. Through their Computer Learning Centers (CLC), they provide a structured hands-on curriculum and the development of training manuals for teachers and pupils.

- **Shidhulai Swanirvar Sangstha** a non for profit organization, works to improve the quality of life in northern Bangladesh watersheds by taking services to the people by solar powered boats. These services include children’s education, libraries, training on sustainable agriculture, healthcare, adaptation strategies for climate change, waste management, computer education and Internet access.

A. **Mobile Phones and Development**

Mobile phones offer increased opportunities by providing increased choice in when, where, and how teachers teach and how pupils learn. Largely, research on mobile phones in developing countries tends to provide anecdotal, rather than qualitative evidence of the technologies impact on teaching and learning. Kaplan (2006) explores evidence that supports the idea that fixed and mobile telephones is, or could be, an effective healthcare intervention in developing countries. Of importance to EIA is how Kaplan’s study illustrates the ways mobile phones provide “the ability to create a multi-way interaction between patient and provider(s) and thus facilitate the dynamic nature of this relationship” (¶ 4). Also relevant to EIA is Mestalfe’s (2007) argument that oral technologies, have increased potential as being particularly useful for supporting oral communication through audio files played on mobile phones.

B. **Mobile Phones and Teacher Professional Development**

Using mobile phones for teacher professional development in emerging economies, like Bangladesh, is a promising field whose applications are context specific and largely absent from the literature. Studies exist that exemplify the importance of this technology, but they remain largely outside education and almost completely outside teacher professional development. Walton et al (2005) describe a project in the USA exploring the potential for mobile technologies to give health pupils access to learning resources in their local communities. Pupils in the study found accessing learning resources using mobile technologies, particularly PDAs, laptops, mobile phones and portable radios a very useful resource. Similarly, a study by Kinsella (2009) illustrates the usefulness of open source software that allows large numbers of pupils to provide their lecturers access to immediate SMS feedback on content presented in lectures.

EIA understands the relevance of these studies and as a result field-tested a number of mobile phones and portable rechargeable speakers with teaching and professional development resources on micro SD cards in rural contexts with limited and/or no electricity. EIA also implemented a targeted SMS teacher professional development messaging curriculum, that on interview, teachers found easy to use, relevant and well suited to improve their teaching of English in both primary and secondary classrooms.

IV. ‘**DIGITAL BANGLADESH**’ and ‘**VISION 2021**’

EIA is not a development project that works on people. Rather it works with people, particularly teachers to build their capacity to become better teachers and more proficient in English. EIA, also works within existing government initiatives and is closely and intentionally aligned with ‘Digital Bangladesh’ and ‘Vision 2021’. Both emerged as part of the country’s “Charter for Change” in the election manifesto of the Bangladesh Awami League for the country’s 9th Parliamentary election, which it won by a landslide in 2008. In its manifesto, the newly elected democratic government promised to make Bangladesh an influential and networked information and communication technologies (ICT) nation while still upholding the values inherent in the country’s War of Independence and Principles of Constitution.
A. ‘Digital Bangladesh’

The philosophy of ‘Digital Bangladesh’ is an attempt to ensure the citizens of Bangladesh’s democracy and rights. It aims to be transparent, accountable, establish justice and ensure the delivery of government services through the widespread use of technology to improve the lives of Bangladeshis regardless of class or social status. The government has emphasized the four elements of the ‘Digital Bangladesh’ vision:

1) human resource development;
2) people involvement;
3) civil services; and
4) use of information technology

“Digital Bangladesh” does not only mean the broad use of computers, perhaps it means the modern philosophy of effective and useful use of technology in terms of implementing the promises in education, health, job placement, poverty reduction etc. Therefore, the government underscores a changing attitude, positive thinking and innovative ideas for the success of “Digital Bangladesh”.

BOI, Prime Minister’s Office ¶12

B. Government ‘Vision 2021’

The government of Bangladesh is committed to building a country whose citizens are able to live prosperous and happy lives by the year 2021, which marks the golden jubilee of Bangladesh’s independence.

We envision a democratic system where people choose their government freely and get services from it without hassle, enjoy freedom from fear and intolerance, live with dignity; where every citizen is assured of social justice, environmental protection, human rights and equal opportunities; and where the rule of law and good governance flourish...Simultaneously we envision a Bangladesh which by 2020/2021, will be a middle income country where poverty will be drastically reduced where, our citizens will be able to meet every basic need and where development will be on fast track, with ever-increasing rates of inclusive growth.

BOI, Prime Minister’s Office ¶12

For the Government’s vision to be realized, the potentials of ICT sector will also need to be realized and software industries and IT services will need to be developed with an digital infrastructure to support digitally-savvy entrepreneurs, young people and citizens. The Prime Minister’s Office’s A2I regards it as a “remarkably pro-poor manifesto” that “represents a modern day translation of the vision of a “Sonar Bangla”, or golden Bengal, promised by the Father of the Nation Bangabandhu Sheikh Mujibur Rahman” (A2I, 2011, p. 3).

Not ignoring these government initiatives, EIA sought to leverage technology currently available to help ensure these ideals are made a reality, or more precisely model how technology could be leveraged within a cyclical work-based programme of teacher professional development to bring about real change in localized classroom contexts. EIA’s model aims to be sustainable and is currently working with national teacher training institutes and national and local partners to develop an institutionalized programme.

C. EIA Making ‘Digital Bangladesh’ and ‘Vison 2021’ a reality

Criticisms of mobile phones for international development projects are that they fail to build on existing systems or work in a participatory way and therefore do not achieve local ownership. EIA’s Technology strategy works to address this criticism in the literature. EIA has identified the Nokia C1-01 mobile phone (£38), with 2GB micro SD cards (£1) preloaded with all of EIA’s audio and video materials and portable rechargeable speakers (£25) as the best technology Kit to achieve EIA’s goals in line with ‘Digital Bangladesh’ and ‘Vision 2021’ from 2012 to 2014. In January 2012, we will distribute these Kits to 5000 teachers across the country, then upscaling to 12,500 by 2015. To inform the choice of the best kit, EIA field-tested a variety of media players (2009-2010), mobile phones and rechargeable speakers (that use the same battery as mobile phones) across two rural Upazillas or sub-districts (March-July 2011), looking at ease of use, performance in classroom contexts, durability and recharging.

EIA’s goal was to assemble kits for distribution to teachers across the country, some with limited and/or no electricity. We found the Nokia C1-01 best met project needs as mobile phones saturation among teacher is near 100% and is an essential tool in all teachers’ daily lives. Asking teachers to charge an additional device like a media player, when electricity is not readily available, was an onerous task for many. During our initial pilot using (2009-2010) media players (iPod Nano and Touch), many of the 700 participating teachers confirmed this on interview.

D. Communicative English Language Teaching Resources on the Nokia C1-01

EIA provided extensive materials to primary teachers on the Nokia C1-01 to assist them in implementing communicative language teaching (CLT) practices with their pupils. Primary teachers’ Nokia C1-01 came preloaded with audio resources specifically produced to match every lesson in the national textbook series at their year level (Levels 1-5). In total, each primary teacher received 355 audio files (primarily dialogues). The Nokia-C1-01 also provides primary teachers with songs for the beginning and end of every lesson, and a range of supplementary songs, poems and other readings. In addition, all primary teachers have EIA-produced Activity Guides at each of the 5 grade levels with complimentary visual (posters, flash cards, figurines) and print resources (audio transcripts of the dialogues). Secondary teachers receive fewer additional classroom resources because they generally have higher levels of English language proficiency and have received more pedagogical training then their primary counterparts.

To support CLT practices in the secondary classroom, teachers were provided with lesson plan cards, maps, and photos. The sheer volume of materials (355 audio files, visual, tactile and print-based resources and activity guides) made available to teachers thus far in the project (more than 700) is significant. By 2012, as 5000 additional teachers will be provided with these same resources, it will make EIA one of
the largest CLT teacher professional development projects in the world. Then in stages the project will leverage the technology available to provide up to 102,000 teachers with the same resources to make the primary aim of the project, providing English language to 25 million Bangladeshis (12 million pupils) as a tool for better access to the world economy, viable and sustainable.

EIA’s strategy does not view information communication technologies (ICT) as simply software and hardware systems adopted by teachers, but rather they are powerful tools applied to human needs within specific cultural contexts across a diverse country. EIA’s technology strategy is incorporating these new mobile phone based resources alongside a programme of work-based teacher professional development to reach 102,000 teachers by 2017:

![Diagram of EIA's work-based model to support changes in classroom practice](image)

EIA’s work-based model of teacher professional development

Participation in new classroom activities is at the heart of teachers’ professional development in EIA, being the primary driver for transforming both their professional knowledge and practice. There are two layers of support provided to teachers, to enable their participation in such activities. The first layer of support is always ‘on hand’ to the teacher while they are in their school; such support includes teaching resources to be used directly within the new classroom activities, and professional development resources for teachers to engage with in preparation for, or reflection upon, carrying out the new classroom activities.

For primary teachers, principal teaching resources are a series of audio materials on the Nokia C1-01. They include dramatizations, songs, stories and a cast of characters from a fictional school. In some ways, the audio resources for primary are similar to those that might be used in Interactive Radio Instruction (IRI), but with much greater emphasis on teacher and pupil agency, creativity and independence than typical IRI materials, being preceded and followed by recommended activities that do not rely on the audio. For secondary teachers, the main teaching resources are also audio files, representing all of the English readings within the textbook series, and enhanced by additional stories, songs and other materials; the secondary materials bear no resemblance to traditional IRI materials, and are simply resources for teachers to use in classroom activities. To this extent, the mobile phone plays the role of ‘the classroom in your pocket’ (Power & Thomas, 2007), providing a rich range of classroom resources that teachers can carry ‘in their pocket’. For primary and secondary teachers, the professional development materials are primarily audio-visual, being provided through audio and video components on the mobile phone. These include audio examples of ‘classroom language’, videos showing how some teachers have carried out the suggested activities, making explicit possible approaches to classroom management and organization, and examples of techniques being carried out effectively, or problematically, for teachers to see and discuss. To this extent, the mobile phone acts as the ‘trainer in your pocket’ (Walsh, 2011).

Peer support is a fundamental component of the support in school: two teachers from each school are chosen to work through the professional development cycle together and provide each other with support and feedback. This aspect of support is critical in overcoming isolation, particularly in rural schools, and is in contrast to the use of ‘champions’ (typically individual teachers, sent away to face-to-face training, then expected to champion (cascade) the new practices amongst the other teaching staff upon return to their school). In evaluation, when asked to identify the most helpful aspects of EIA’s support to teachers, teachers most commonly respond either citing ‘the audio resources on the mobile’ or ‘my teaching partner in school’.

In addition to the support always on hand to teachers in school, EIA also provides more traditional support beyond school, in the form of workshops and cluster meetings, providing an 18 month programme of training on CLT practices, and providing a forum for sharing, reflecting and problem solving amongst a wider group of teachers.

F. EIA’s ‘trainer in your pocket’

EIA is a nine-year project that will provide professional development for 102,000 teachers by 2017. This massive undertaking was not conceived as programme with a fixed end date, rather the idea or ethos behind the programme was to provide a vehicle for ongoing self-supported learning after the project officially ends. To this end, the idea of the ‘trainer in your pocket’ emerged as a viable way to provide teachers with the professional development required to meet and sustain the projects goals after 2017.

The ‘trainer in your pocket’ set of professional development resources to support primary teachers’ own learning includes 18 video clips and 4 audio recordings that exemplify a range of correct and incorrect English CLT classroom practices. Figure 2 is an example of the trainer in your pocket’, an ICT-enhanced teacher professional development video entitled, ‘Answering Questions’ developed by The Open University. It is intended for teachers to use for self and guided learning on how to ask questions using visuals in their English classrooms. Secondary teachers are supplied
with 46 audio files dedicated to teacher professional development alongside a print-based teacher professional development package entitled, English for Today in Action, that presents 12 CLT modules (Active listening, predictive listening, using visual aids, creative writing, etc.) that they can adapt and use to teach communicative English.

The ‘trainer in your pocket’ is an example of how EIA’s technology strategy is constantly driven and reflected on through research, monitoring and evaluation. EIA’s research methods incorporate sociocultural anthropology and ethnography to help elucidate the cultural contexts of ICT use. It became clear in our original pilot that media players were not a sustainable or viable choice. EIA’s technology kits are clearly relevant to answering the question of what strategies or actions are most likely to result in the deployment of mobile technologies that will truly advance EIA’s primary goals and remain sustainable after the project ends in 2017. An example of this is our decision to use micro SD cards. In the future our cost per teacher will be drastically reduced if we only have to provide teachers with micro SD cards and portable rechargeable speakers.

V. ADAPTING A MULTILITERACIES CURRICULUM FOR INTERNATIONAL DEVELOPMENT

EIA’s curricular framework mirrors the multiliteracies curricular framework outlined by the New London Group (1996) as it takes into account the changing social and technological environment facing teachers and pupils in Bangladesh. Although EIA’s curriculum and pedagogy are not literacy based, like multiliteracies pedagogy, they stand in opposition to more traditional grammar-based English language teaching pedagogies. Similar to EIA’s project goals which are designed to contribute to the growth of Bangladesh by providing English language as a tool for better access to the world economy, The New London Group views the mission of education as all pupils benefiting “from learning in ways that allow them to participate fully in public, community, and economic life” (P.60) The term multiliteracies was used to focus on the on the realities of increasing local diversity and the increasing ubiquitous networked society. EIA understands, like the New London Group (1996) that,

Effective citizenship and productive work now require that we interact effectively using multiple languages, multiple Englishes, and communication patterns that more frequently cross cultural, community, and national boundaries. Subcultural diversity also extends to the ever broadening range of specialist registers and situational variations in language, be they technical, sporting, or related to groupings of interest and affiliation. When the proximity of cultural and linguistic diversity is one of the key facts of our time, the very nature of language learning has changed. (p. 64)

EIA also understands that for pupils to become more proficient in English, “how” teachers teach and “what” and “how” pupils learn must shift to the point where both are involved in transformative practices. In what follows, we outline and illustrate (through the links provided) how EIA’s approach mirrors aspects of a multiliteracies pedagogy or a “theory of pedagogy” based on views, from extensive baseline studies, about how “the human mind works in society and classrooms, as well as about the nature of teaching and learning” (p. 82) in Bangladesh.

EIA’s approach to large scale teacher professional development in a developing economy like Bangladesh draws similarly on the integration of four pedagogical factors: situated practice; overt instruction; critical framing; and transformed practice which are outlined below.

- **Situated practice** is where teachers are made aware of the specific English language competencies (listening, reading, writing and speaking) needed to access greater social and economic opportunities. With this understanding teachers understand the communicative English objectives / skills / proficiencies that pupils need to achieve. They also know the purpose of their own pedagogical practice and how it is related to the purpose of the communicative practice pupils will need to be engaged in and how it reflects already stated (competencies) in Bangladesh’s existing standards or curriculum frameworks. Here the teacher is a guide and uses audio files on the mobile phone to teach communicative English and provide pupils with an audio example of spoken communicative English used in authentic, yet situated, contexts not entirely foreign to pupils.

- **Overt Instruction** is where teachers teach communicative ELT practices/strategies (monitoring, integrating skills, eliciting, assessment, etc.) that focus on communicative listening, speaking reading and writing. Here the teacher is accessing knowledge already inherent in the pupils from listening to the audio and providing a basis for adding new information to the old.

- **Critical framing** is where teachers help pupils make sense of the overt instruction through new teaching/learning activities. They draw on a ‘toolbox’ of activities where ‘what’ pupils are doing is the focus (group work, role play, games, using visuals, etc.). This is where the teacher helps pupils clarify and make sense of what they have learned (towards the end of the film).

- **Transformed practice** is where there are explicit examples/descriptions of teachers and pupils actually engaged in new communicative English teaching and learning practices where both acquire higher levels of
substantial increase. In secondary while the proportion of pupils who passed (below grade 1) dropped from 28.9% to 10.4% in 2011, the number of pupils who passed at the initial levels (grades 1-3) rose from 61.9% to 66.6% but pupils passing at the elementary level (grade 4-6) rose from 9.2% to 22.4% a substantial increase.

VI. EIA’S TECHNOLOGY ENHANCED WORK-BASED MODEL OF TEACHER PROFESSIONAL DEVELOPMENT

EIA’s model of work-based professional development for ELT teachers using the Nokia C1-01 has brought about new communicative ELT teaching strategies. Teachers are working collaboratively to initiate/try, evaluate and then gradually adapt/adopt/embody these strategies in their professional practice. They are supported in this by their peers (in school, and in local networks in/beyond their school), and through the materials (print, tactile, audio & visual) and tools (mobile phones) provided. This is not traditional ‘distance learning’ as it is not primarily ‘self study’, nor is it traditional ‘teacher training’ in which the training and support is offered at a center that is physically and conceptually ‘distant’ from the teachers’ context of practice: their classroom.

In Work Based Professional Development for ELT most of the teachers’ learning is very ‘close’ to the context of their practice – the classroom and the school – and support is provided within that context, or close to it. This model, through external evaluation, has proven to be successful at encouraging higher percentages of teachers and pupils to speak English in the classroom. Additionally, the research points to the fact that pupils have acquired higher levels of communicative (speaking and listening) English language competency. For primary pupils, prior to EIA, 64.3% of pupils failed to pass the Trinity’s internationally recognized and well-tested language assessment scale (2010). In 2011, that number dropped to 49.9%, a substantial decrease. In 2010 35.4% of the pupils scored initial levels (passing) levels of English language competency and this number rose to 50.1% in 2011, a substantial increase. In secondary while the proportion of pupils who failed (below grade 1) dropped from 28.9% to 10.4% in 2011, the number of pupils who passed at the initial levels (grades 1-3) rose from 61.9% to 66.6% but pupils passing at the elementary level (grade 4-6) rose from 9.2% to 22.4% a substantial increase.

VII. CONCLUSION

EIA’s work-based model of teacher professional development is working to build capacity among teachers themselves that explicitly addresses the human and pedagogical development impacts of the project’s 9-year logistical framework. This is an example of using mobile phones, for development that ensures the stakeholders (teachers) are central to the process. EIA’s framework although massive in scale leverages ‘the trainer in your pocket’ to facilitate grassroots innovation and achievement of localized community goals around transforming English education. In this view, EIA’s target is centered around human development strategies that provide ICT-enhanced professional development as complimentary, but essential as an open distance learning (ODL) strategy for development in emerging economies like Bangladesh.

REFERENCES