INTERNATIONAL CONFERENCE

on Use of ICT and ODL in TEACHER EDUCATION in Bihar, India

CONFERENCE REPORT

THE WORLD BANK
FOREWORD

In 2002, India, through its 86th Constitutional amendment which came into effect in April 2010, made elementary education a fundamental right of every child, reflecting India’s deep commitment to education. India has now joined 134 other countries in the world which have ensured free and compulsory education as a right of children. The World Bank feels privileged to be a part of this effort of the Government of India through its support to the Sarva Shiksha Abhiyan (Education for All) (the vehicle for implementation of the Right to Education (RTE) Act), which has been about $2 billion till now. The importance of the “right-based” approach to education in economic development and social transformation is recognized and affirmed by education experts and the international community in several ways. The Education for All goals (Jomtien, Thailand, 1990) and the 2000 World Education Forum in Dakar are expressions of the international community’s commitment to educational goals. For education to be a meaningful right it must be available, accessible, acceptable and adaptable.

The goal of achieving good-quality universal elementary education will remain elusive unless the centrality of the teacher is recognized in the process of educational reforms. To improve learning outcomes in the Indian context, a key challenge is to improve teacher quality and performance. As RTE mentions, specific pre-service qualifications for teachers as well as stipulated norms for the teacher-pupil ratio and special requirements have emerged which need careful consideration. It is important at this juncture to facilitate the enhancement of the role and capacities of teacher education institutes in India to make them globally competitive, professionally managed and progressive, to cater to the needs of the huge backlogs of untrained teachers whose training is crucial to ensuring that children at the elementary level receive quality education in accordance with the requirements of the curriculum. We are happy to note that Bihar has already taken the lead in preparing strategies to address the issue upfront with adoption of international best practices and successful interventions to suit its own requirements.

For meeting the diverse and pressing requirements of teacher education reform, the need at present is to explore not only traditional but also alternative mechanisms of proving teacher education that are professionally managed, address the issue of distance between teachers and the taught, and generate enhanced and innovative delivery mechanisms.
Use of information and communication technologies (ICT) and open distance learning (ODL) in teacher education, especially for meeting the needs of pre-service teacher education, have been accepted as viable and effective options. The World Bank is now helping the Government of Bihar to develop its strategy for teacher education reform that will make extensive use of ODL and ICT.

With this purpose the present Conference was organized to develop a strategy for ICT curriculum development, materials production, media section, production and dissemination strategies that could help in addressing the backlog of untrained teachers and continuous professional development of teachers in Bihar. Experts from UK, US, Korea, Indonesia, Africa and other Commonwealth of Learning (CoL) countries participated and shared their experiences. I thank the Honourable Chief Minister Shri Nitish Kumar for inaugurating the Conference and defining the teacher education agenda for Bihar. I thank the Honourable Minister of Human Resources Development Mr. P.K. Shahi and the Principal Secretary Mr. Aamarjeet Sinha for their participation in the conference.

I hope this Report on the International Conference on Use of ICT and ODL in Teacher Education will provide useful information on the conference deliberations and the key recommendations made.

Michael Haney
Operations Advisor
The World Bank, India
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<td>BBOSE</td>
<td>Bihar Board of Open Schooling and Examination</td>
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<td>Bihar Curriculum Framework</td>
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<td>BRC</td>
<td>Block Resource Center</td>
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<td>CIET</td>
<td>Central Institute of Education Technology</td>
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<td>DE</td>
<td>Distance Education</td>
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<td>DIET</td>
<td>District Institutes of Education and Training</td>
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<td>DPE</td>
<td>Diploma in Pre-school Education</td>
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<td>ICT</td>
<td>Information Communications Technology</td>
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<td>IGNOU</td>
<td>Indira Gandhi National Open University</td>
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<td>NCERT</td>
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<td>NCF</td>
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<td>NCTE</td>
<td>National Council for Teacher Education</td>
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<td>NIOS</td>
<td>National Institute of Open Schooling</td>
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<td>ODL</td>
<td>Open Distance Learning</td>
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<td>OER</td>
<td>Open Educational Resource</td>
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<td>PTEC</td>
<td>Primary Teacher Education Center</td>
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<td>RTE</td>
<td>The Right to Education</td>
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<td>SCERT</td>
<td>The State Council Educational Research and Training</td>
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<td>SITE</td>
<td>Satellite Instructional Television Experiments</td>
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<td>SSA</td>
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Background

With Sarva Shiksha Abhiyan (SSA) transitioning towards the Right To Education (RTE), teacher education institutions and systems need to be fully geared up to meet the demands of pre-service and in-service teacher education and their professional development. Most states do not have a systemic provision of a cadre of elementary level school teachers. It is important at this juncture to facilitate the enhancement of the roles and capacities of teacher education institutes in India to make them globally competitive, professionally managed and futuristically progressive to cater to the needs of huge back logs of untrained teachers, whose training is crucial for ensuring that children at the elementary levels get quality education that is in accordance with the National Curriculum Framework (NCF) 2005 and its basic tenets of child centered pedagogy.

Recent analysis by the Department of Education shows that at present there are 523,000 vacancies of school teachers at the elementary level, and the provisions of Pupil Teacher Ratio specified in the Schedule of the RTE Act will lead to additional requirement of around 510,000 teachers. Moreover, around 774,000 teachers are untrained, that is, they do not possess the prescribed qualifications. Further, there are large inter-state variations in terms of percentage of untrained teachers, vacancy of teacher posts, and additional requirements of teachers under the RTE and the capacity of the institutions to prepare professionally trained teachers. Assam, Bihar, Chhattisgarh, Jammu and Kashmir, Jharkhand, Orissa, Uttar Pradesh and West Bengal together account for 606,000 untrained teachers and 973,000 teacher requirement. The problem is compounded due to the paucity of appropriate Teacher Education Institutions (TEIs).

The Case of Bihar

The State of Bihar has a huge shortage of teachers and student-teacher ratio is below the national average; most of the schools are single or two teacher schools, and the schools used to open for less than 100 days in a year. Bihar adopted a policy of decentralized recruitment of teachers, as a result of which 214,000 teachers were recruited. As a sufficient number of trained people were not available, most of the recruited teachers
were untrained. These untrained teachers numbering about 150,000 are now being trained through a distance mode by IGNOU in two-year training courses. This was the first time that IGNOU conducted training at such a large scale. Though IGNOU was able to provide printed course materials and academic support through academic councillors, multimedia and other technologies could not be optimally used. To meet the requirements of RTE, Bihar has to deploy another 3000,000 teachers. According to estimates, 250,000 of these will again be untrained. It will be a gigantic task to provide two-year training courses to such a large number of teachers. Though the state is preparing its Nalanda Open University, the State Open School, Primary Teacher Education Center (PTEC) and some of the constituent degree colleges for providing various training courses, the target to be met is steep.

To meet such diverse and pressing needs, it is important to explore alternative mechanisms of proving teacher education that are professionally managed, address the issue of distance between teachers and the taught, and generate enhanced and innovative delivery mechanisms. Use of Information and Communication Technology (ICT) and Open and Distance Learning (ODL) in teacher education, especially for meeting the needs of pre-service teacher education is a viable and effective option. As is the case for other sectors of the wider economy and society, education will need to come to terms with the new technologies. This could require substantial public and private sector investments in software research and development, purchase of hardware, and refurbishment of schools. With the advent of media and community empowerment, there is a growing demand for quality education, which requires better trained teachers.

The World Bank has been requested by the state of Bihar to provide support in development of distance education curriculum, related syllabi, content, effective delivery mechanisms, appropriate student support systems, and assessment strategies to meet the needs of the large group of untrained teachers. Many other states are facing similar problem, and will need to prepare comprehensive time-bound plans for the untrained teachers to acquire the prescribed qualifications (both academic and professional). Thus, the Bihar experience might become a model for developing an ICT based TE system that could be used as a useful reference point by other states faced with similar problems.

**Objectives of the Conference**

Within the above context and in collaboration with the European Commission, the World Bank organized a three-day capacity building and materials development workshop in the state of Bihar on 13th–15th June 2012.

The objectives of the conference were to:

- Develop a strategy for ICT curriculum development, materials production, media selection, production, and dissemination of ICT materials addressing the backlog of untrained teachers.
- Share best international practices in ICT and ODL in teacher education.
- Identify strategies relevant for Bihar to address the specific challenges of the state.
- Deliberate on alternate strategies to train teachers efficiently on a large scale in a short period using innovative combinations of ICT, distance education and other modules.
- Develop a delivery model and implementation guidelines which can be scaled up to regional as well as national levels.
Overview of the Conference

The conference covered both policy and practice in teacher education, with particular emphasis on the use of ICT and ODL. Discussion reflected on both Indian and international experiences, while group discussion allowed participants to engage with each other to develop with implementable solutions. A detailed agenda is presented in Annex 3, but, in broad terms, the Conference structure was as follows:

**FIGURE 1: Structure of the Conference**

![Diagram of Conference Structure]

Key issues discussed were:

- National interventions in ICT – Historical perspectives and present scenario.
- Distance education in India over the years, need for a transition to newer technologies and strong M&E systems.
- Curriculum and statutory requirements.
- Building on existing experience and materials (multi-media products, SITE experience and etc.).
- Institutional contributions (Delhi university, IGNOU, CIET) – challenges and achievements.
- Thought provokers – Boston Consulting Group, One Laptop Per Child (MIT, Boston)
- International experiences – innovative technologies, non-traditional target groups for larger gains.
- Non-governmental and private sector inputs – teacher foundation, educomp, cisco, save the children, education initiatives.
- The role of national and state institutions (NIOS, BBOSE).
- State experiences (Meghalaya, Gujarat, Assam, UP, Bihar).
- Teacher needs assessment and teacher assessment methodologies, including M&E mechanism.

Brief summaries of presentations made during the conference are presented below, together with the deliberations of working groups and conclusions reached during the final session of the Conference.
Welcome and Objectives of the Conference

Speaker: Dr. Shabnam Sinha, Senior Education and Institutional Development Specialist, Task Team Leader, The World Bank

This opening presentation set the scene for the conference, by welcoming all delegates, noting the presence and engagement of senior decision-makers from the State of Bihar, and reviewing the context in which it was taking place (as outlined in the Background to the Conference). The World Bank has been engaged with Bihar for a substantial period, and noted – in its discussions with the Government of Bihar – that there is an immediate need for providing teacher trainees with formal initial teacher education programmes to ensure that they are properly certified. In addition, there is an accompanying need for institutional reform in teacher education in Bihar, in order to develop State-wide institutional capacity for teacher education, both for pre-service training and continuing professional development. Within this context, the Conference aims to discuss and explore innovative ways to train teachers, with a view to making recommendations on appropriate strategic directions in Bihar. It will discuss effective programmes and initiatives which have already been implemented both in India and internationally. It will then focus exploring suitable strategies in Bihar, with particular focus on: (i) what the curriculum for distance learning should be; (ii) institutional reforms required; (iii) curriculum development strategies and (iv) alternative and innovative strategies to train teachers, including use of ICT.
Teacher Education: An Emerging Area of Engagement of Development Partners

**Speaker:** Dr. Hans van Vliet, *First Counselor, Development Cooperation, Delegation of the European Union to India*

This presentation explored the issue of quality in teacher education programmes in India, especially in the context of Sarva Shiksha Abhiyan. It is critical to focus on the quality of teacher education programmes in India to achieve the goal of educating all children while ensuring equity of educational provision. Education is a fundamental requirement for ensuring human rights and democracy. In order to improve the quality of education in India and eradicate illiteracy, teacher education needs to be prioritized. There are three key challenges in the field of teacher education: (i) quality of education, including teacher retention at schools; (ii) organization of teacher training and (iii) the need for sharing of good practice in the field of education. The NCTE has been preparing a national curriculum for teacher education, but there is value in drawing on wider experiences of countries such as Brazil, China, Indonesia, and Malaysia when developing teacher education programmes in Bihar. In this regard, there are important functions that development partners can play in supporting such activities. Dr. van Vliet concluded by offering support from the European Union to the State of Bihar in tackling its teacher education challenges.

Innovative Approaches for Teacher Education and the World Bank Engagement in Bihar

**Speaker:** Mr. Michael Haney, *Operations Advisor, The World Bank, India*

According to Mr. Haney, India has made strong progress in reducing poverty and enhancing social inclusion, especially access to basic education, which is appreciable. Upon enactment of the RTE, however, teacher-related aspects became front line issues for education and it is important to facilitate the enhancement of the role and capacity of teacher education institutes in India to make them globally competitive, professionally managed, and futuristically progressive to cater to the needs of huge backlogs of untrained teachers. The World Bank has been working closely with the Government of Bihar on many issues and, as a larger support under the teacher education initiative, hopes to support the Government of Bihar in taking forward its teacher education programme. Under this initiative, the challenge is to create a vibrant teacher education system, ensuring access to world-class infrastructure, materials, academicians, and personnel, as well as monitoring and evaluation mechanisms and student support services for quality teacher education programme.
Challenges of Teacher Education in Bihar – the Light of RTE

Speaker: Dr. Amarjeet Sinha, Principal Secretary, Department of Human Resource Development, Government of Bihar

This presentation reflected further on challenges facing the education system in Bihar, as well as exploring solutions currently being implemented to solve these challenges. Bihar has shown the fastest growth rates in the last few years, especially on the human development indicators, which reflect clearly the State’s commitment to education. However, challenges still remain, including quality of education, retention of students in the system, and school attendance (which is around 50%). Given these challenges, a key solution is to focus on reforming and developing the teacher education system, particularly because State support for the teacher education system was unfortunately curtailed around ten years ago. Given this, the Ministry of Human Resource Development faces a challenge of rebuilding systemic capacity in this sector. It is important to ensure basic minimum standards in pre-service teacher education across the State, while also developing systemic capacity for continuing professional development of teachers. A new teacher education programme, which integrates use of ICT, can help to improve educational standards at state-sponsored schools. Linked to this is a need to focus on improving classroom practice. Developing a system of assessment that focuses on students’ achievement and not on their failures is also an important priority. The Secretary General concluded by noting that the Bihar State Government is open to integrated use of ICT, ODL, and other innovative practices to help to bring about a revolution in the system of education, while ensuring that this is not done at the expense of effective, ongoing face-to-face interaction with teacher trainees and effective classroom practice.

Key Note Address

Speaker: Shri P.K. Shahi, Honourable Minister of Human Resource Development, Government of Bihar

The Honourable Minister of Human Resource Development emphasized the importance of focusing on teachers’ critical role in education and the accompanying importance of exploring how most effectively to harness ICT and ODL to support ongoing teacher training in the State. Conclusions and ideas discussed during the conference are expected to help the State in devising plans and strategies for training teachers. Bihar is the only state in our country which has earmarked 14% of the allocated budget to education. Challenges include the limited number of teacher educators in the State
(only 105 teacher educators are produced per year), and a corresponding limited training capacity for teachers. From this perspective, the programme being initiated through this Conference has an important role to play in supporting the State to develop required institutional capacity and to deliver a teacher certification programme that will enable all unqualified teachers in the State to become qualified, both to meet the requirements of legislation and to ensure that all school students in Bihar receive the best possible education while at school.

**Inaugural Address**

*Shri Nitish Kumar, Honourable Chief Minister of Bihar*

The Honourable Chief Minister of Bihar extended a welcome to all delegates participating in the Conference, stressing the importance and value of participants sharing their experience on Teacher Education and learning from each other. TE is a very important subject and there is a great demand for additional teachers and existing teachers. There have been significant gains in education in the State. For example 12.5% children were out of school in 2005, but this number has reduced to just 3%. Enrolment has improved tremendously. Government is providing uniforms, mid-day-meals, school infrastructures, scholarships to SC/ST students, and has launched a new scholarship scheme for needy students. Despite this, only around 50–60% students are attending their schools at the primary level, and it is thus critical to understand why this is the case. There seems to be an issue with teaching patterns and quality of teachers, which reinforces the important of effective teacher education. The State’s ultimate goal for children is ‘high attendance, zero dropouts and completion of primary and secondary education’. The only way to bind the children at school is by providing quality and interesting education. There exist different methodologies to train teachers around the world, so the State would like to learn from others, while keeping in mind the critical question: what are the basic conditions of our existing teachers (in terms of knowledge, adoption capacity) for whom we will provide training? It is not feasible to train such as many teachers as required training in Bihar through a traditional face-to-face institution, because this would require multiple training institutes. There is insufficient time for this approach, as well as a requirement to ensure high levels of quality. The Conference thus needs to deliberate on innovative solutions to these remaining challenges. As part of this, it is important to use local content, so that teachers can easily relate and understand. Initiatives such as this require funding and thus the Ministry of Economic Affairs has approved a proposal to the World Bank for a project on teacher education, the design of which would be informed by the Conference conclusions. The Chief Minister concluding by expressing gratitude for the World Bank, European Union, and the Human Resource Development Ministry for organizing the conference.
Vote of Thanks

Mrs Caralyn Deshmukh, Teacher Education, Ministry of Human Resource and Development

Session I concluded with a vote of thanks. During this speech, it was noted that the last parliament session in Delhi deliberated a lot on the quality of education and the importance of teachers in improving the quality of education. Under the Rashtriya Madhyamik Shiksha Abhiyaan (RMSA) scheme, additional teachers can be provided at primary and pre-primary level. However, lack of resources is a challenge that everyone faces. Apart from deliberating on the use of ICT and ODL, it is thus important also to focus on how to develop the physical infrastructure required to train teachers.

SESSION II: The Indian Scenario of Teacher Education

CHAIR: Prof. A.K. Sharma, Former Director, National Council of Educational Research and Training

In introducing the session, the Chair noted that the history of teacher education in India after independence started with the establishment of secondary education in 1952 and 1953. This created a need to professionalize teacher education, and also led to the birth of correspondence education for teachers in the early 1960s. In 1973, though, correspondence education programmes in teacher training became a cause for concern in government. A statutory body – the National Council of Teacher Education (NCTE) – was established to regulate the commercialization of teacher education programmes. In 1978, the first teacher education framework came in the country, which looked at teacher education from a holistic perspective and discussion on the need for specific teacher requirements for the different stages was held. From 1986 onwards, decentralization of teacher education began with an emergence of DIETs and colleges for teacher education. Then in 1998, a new national curriculum, including distance learning for teachers was introduced. Thus, there is a strong and rich history of teacher education in India on which to draw in generating strategies to meet the challenges in Bihar.
Teacher Education and NCERT: The Journey so Far and Way Forward

Speaker: Prof. Rajaram S. Sharma, Joint Director, CIET, NCERT

According to this presenter, there are three important criteria to consider when developing teacher education modules. Modules have to be scalable, replicable, and sustainable. Teacher education programmes need to grapple with the issues of pedagogy and classroom management for a longer time, to enable teachers to become self-reflective and deal with curricular issues and students.

One delivery method of teacher education has been tele-education using satellite based programmes. However, these encountered significant limitations, particularly in the lack of feedback channels and doubts amongst students about the delivery methodology. This example illustrates the importance of teachers getting involved in curriculum and textbook development processes, as well as the potential value in harnessing existing materials available from projects and initiatives around India.

Use of ODL and ICT in Teacher Training with Special Emphasis on English Language Teaching

Speaker: Prof. Rama Matthew, Head, Central Institute of Education, Delhi University

Currently, English education is introduced at the early stage, which usually starts at grade one. Issues in English education include the poor quality of teachers’ own proficiency of English, a lack of knowledge in English as a Second Language (ESL) pedagogy, and support for teaching. Current teacher training does not provide courses in ESL pedagogy, thus, teachers do not learn its importance and meaning. A suggestion for English teaching methodology is to have a blended approach, which includes both face-to-face engagement between teachers and students and makes teachers autonomous and self-directive by using ICT. Textbooks also need to be teacher friendly and the assessments should be proficiency-based rather than text-based (memory-based).
Use of ODL in Teacher Education: The IGNOU Experience

Speaker: Prof. S.V.S. Chaudhury, Indira Gandhi National Open University and Director, Distance Education Program, Sarva Shiksha Abhiyan

Indira Gandhi National Open University (IGNOU) was established in September 1985 by an Act of Parliament, to democratize and augment opportunities for higher and continuing education, widen access, and promote a flexible and cost-effective system of education. Two major functions exist for IGNOU: (i) design, develop, and produce programmes and deliver them through ODL and (ii) promote, coordinate, and maintain standards in open distance learning system in the country through a statutory body, the Distance Education Council (DEC). IGNOU has provided education for over 4 million students in India and 43 other countries. It has 21 schools of studies and 425 faculty members and academic staff at headquarters and resource centres. There are 67 regional centres and over 3,000 learner support centres in India. Internationally, there are 80 learner support centres. In all, 36,000 academic counselors from conventional institutions of higher learning, professional organizations and industry are available to support students. IGNOU is equipped with a network of 40 radio stations, TV channels, EduSat network, e-Gyankosh (national digital repositions to store, preserve & share digital learning resource), virtual classrooms, mobile-phone based learning platform (SMS alert services), on-demand admissions and examinations, webcasting facilities and a YouTube platform. Course instruction is comprised of self-study printed materials, audio and video materials, assignments, academic counseling, teleconferencing, interactive radio counseling and dissertation/project work. IGNOU is a nodal agency to implement ODL activities under SSA, and thus helps States design, develop, and use self-learning training materials. Despite available facilities and infrastructure, there is a problem of inefficient use. Other concerns include the need of improvement in classroom process, quality of learning materials, motivation and readiness of teachers for training, implementation of practical courses, coordination between State Governments and IGNOU, quality assurance, learner support systems, the need for physical (ICT) and human resources, and strengthening of management systems. Resolving these issues is a prerequisite for a successful teacher education programme.

Curriculum Framework for Teacher Education through Distance Mode in Bihar

Speakers: Prof. B. Phalachandra, Wawasan Open University, Penang Malaysia
Prof. Mohan Menon, Assistant Vice Chancellor, Wawasan Open University, Malaysia

Bihar Diploma in Pre-school Education (DPE) curricula needs to be modified in its course design to focus on school, home,
self-learning and computer-based learning. There is also a need to enable teachers to use ICT. Regarding learning design, it makes sense to use existing material where feasible, rather than developing materials from scratch. Since a lot of materials are already available, development of a study guide becomes the main design component, as this will contain scenarios, games, problems, and cases, will be based on ‘situational learning’, and will be very practice-oriented. Regarding use of technology, learning management systems can be used for additional resource access and virtual interaction, while tele-conferencing can also provide opportunities for learner-expert interaction.

### SESSION III: International Best Practices

**CHAIR: Prof. Geeta Gandhi Kingdon, Institute of Education, University of London**

The Chair started the session by re-emphasizing key issues in the area of teacher education: shortage of teacher educators; poor preparation of teachers; lack of qualified teachers; lack of evidence of improved learning outcomes for children being taught by certified teachers, compared to those being taught by teachers who have not received training; and lack of incentives to become a teacher. There is thus a need for teacher evaluation, teacher accountability, teacher training, quality assurance of teacher education, reviewing the use of ICT and understanding how teachers can be motivated to use ICT, introduction of intrinsic and external motivation to teachers, and incentives for skill upgrading. With this in background in mind, it is useful and relevant to explore international best practices in the field in order to see what lessons can be learned from around the world that are of relevance in Bihar.

### ICT in Financial Sectors: Potential for Teacher Education

**Speaker: Mr. Navneet Vasishth, Boston Consulting Group**

This presentation identified a need for collaborative learning and individually customized need-based learning. Within this context, the presentation introduces a closed-loop instructional system, which is proven to achieve higher educational outcomes and is used by the Boston Consulting Group. The framework starts with holistic educational objectives, then relevant curriculum development
and effective delivery, ensuring that assessments are embedded and allow for real-time understanding of student performance, providing appropriate interventions and remediation based on those assessments, and continually tracking outcomes and learning at the student, teacher, school and district level to ensure that all is going well. Technology enables this system to deliver better student outcomes, faster and potentially at lower cost. Content is no longer a problem, as it comes from multiple sources, including publishers, universities, teachers, and even passionate individuals and most of it is free. The challenge now becomes about navigating, validating, certifying and adapting content to fit one’s needs. The model can be represented graphically as follows:

**FIGURE 2:** Six step approach to build technology enabled 'closed loop' instructional system

Within the country’s technology-friendly environment, this model could work in India. As a quick application of this model, vocational training, especially for the financial sector has particular prospects because banks employ 700,000 people and an additional 200–300,000 workers will be needed over the next few years.

**English in Action in Bangladesh**

**Speaker:** Mr. Tom Power, Senior Lecturer in Teacher Education and Development, UKOU

This presentation introduced the ‘English in Action’ programme in Bangladesh, which is a collaboration between the Bangladesh University and the Open University, United Kingdom. It focuses on adult learners and learners from primary and secondary schools. In Bangladesh,
English competency of teachers is low. In order to improve this situation, peer learning and coaching were introduced. As a tool, mobile phones were used with a memory card which had audio/visual data loaded. As an example of peer learning, teachers talked about what works for one teacher and shared lessons with others through video. Local accents were used for English materials, which can be played in mobile phone. By allocating a quarter of the budget to monitoring, the programme was able to measure the results effectively. It observed substantial increases in the use of English language in the classroom, increased opportunities for students to converse in English language, and conducting of proper assessment of speaking abilities of students. This experience emphasized the importance of enabling teachers through peer learning, supporting them with adequate materials and using appropriate technologies which are practical and readily available.

Open Educational Resources for Teacher Education in Commonwealth Countries

Speaker: Prof. Mohan Menon, Assistant Vice Chancellor, Wawasan Open University Malaysia

The Open Educational Resources (OER) movement has been picking up in the last decade and has opened up innovative possibilities for course development and learner support in Open and Distance Learning. This presentation introduced an approach of curriculum development in which the course package has two components: a study guide and a resource pack compiled from OER. The learner uses materials from the resource pack according to the requirements of the study guide. This approach has been adopted with success by two open universities in Sri Lanka and Malaysia.

- In Sri Lanka, in a course titled ‘Role of Teacher Educators as a Researcher,’ which is one of the six courses in Master in Teacher Education Programme developed by the Open University of Sri Lanka in collaboration with the Commonwealth of Learning, Vancouver.
- In Malaysia, integration of OER into a course titled ‘ICT in Education’ under a Master of Education Program offered by Wawasan Open University, which is to be offered in the July semester of 2012.

The curriculum structure of the courses is different, but a similar constructivist approach was adopted for curriculum design. According to this approach, individuals build their own theory of the nature of the world, from their own perceptions and experiences. This is grounded in the idea that “people learn by actively constructing new knowledge, rather than having information poured into their heads.” In both cases, OER was integrated in a locally developed study guide. The Sri Lankan course adopted a blanket approach of using an OER course (with adaptation) in Research Methods to support scenario-based learning, while the Malaysian course used an approach of specifically identifying OER learning objects to link with every content section. This emphasizes that there is no one-size-fits-all model of integrating OER into course materials. The main challenges experienced have
been to obtain licences to use technology and print materials. The payment of royalty to universities which rented the audio-visual material is an obstacle and more relaxation of licences in developing curriculum is needed.

ICT Competency Framework for Teacher Education -
The Indonesia Experience

Speaker: Neil Butcher, Director, Neil Butcher & Associates

With over 50 million students and 2.6 million teachers in more than 250,000 schools, Indonesia is the third largest education system in the Asia region and the fourth largest in the world (behind only China, India, and the United States of America). Legislation was introduced in 2005 requiring teachers to become qualified, as there was an over-supply of teachers who were under-qualified. Several important lessons have emerged from the experience of delivering certification programmes to upgrade under-qualified teachers, not least of which is the danger of increasing salary bills without improving quality of classroom practice unless there is explicit focus on this objectives. Curriculum reform needs to happen, and thus it is important to consider not only training teachers, but also what the consequence of the training will be, as it will increase the number of qualified teachers who will then expect increased salaries. This may erode available budgets for education over time.
Institutional Collaboration: Implications for Teacher Education

Speaker: Dr. S.S. Jena, Chairman, National Institute of Open Schooling (NIOS)

This presentation focused on the development of a distance-learning teacher training programme by NIOS for untrained teachers, undertaken in collaboration with the state government of Jharkhand. There are five key areas of collaboration in this kind of ODL engagement: (i) curriculum and course materials; (ii) technology and instruction; (iii) resource persons; (iv) cost sharing and (v) assessment and certification.

Collaboration can be at the individual level, institutional level (placement of resource support) and a consortium level (sharing of expertise). Benefits of collaboration at the individual level include increasing opportunities for professional capacity-building, accessibility and equity, enabling credit transfer, enhancing competencies and level of efficiencies and quality control. At the institutional level, benefits include the expansion of outreach, shared vision, elimination of duplication, establishment of inter-institutional relations, improvement of quality of learning and materials, and innovations in methodologies.

Conditions for effective collaborations are: (i) mutual trust and respect; (ii) shared values and vision; (iii) openness and commitment; (iv) mutuality of benefit; (v) credibility and general acceptability; (vi) developmental needs and (vii) government support. It is essential that the State identifies and ensures availability of infrastructure and resource persons/mentors at the decentralized level, establishes study centres as required by the programme design,
ensures eligible resource persons to conduct the contact sessions, identifies locations
to conduct contact sessions, and involves state level resource institutions in delivery.
Challenges of collaboration include copyright ownership, institution philosophy and policy
directions, dominance of powerful partners, ideological differences, profit sharing formula,
administration and logical bottleneck, and time constraints.

**Use of ICT for Teacher Development: The Karnataka Experience from Teacher Foundation**

**Speaker:** Ms. Maya Menon, Teacher Foundation, Bangalore

This presentation focused on two recent initiatives: (i) Government directed teacher
development (training teachers using Cisco's CEED platform and collaborating
with DSERT & SSA) and (ii) self-initiated teacher development (using Facebook for
continuing professional development of teachers).

**Government directed teacher development**

The objective of this programme was to use technology to deliver high quality remote
training to several hundred teachers simultaneously at multiple remote locations. The
implementation modality included allocating two lead/expert trainers at a host centre
(six batches of 50 teachers each trained simultaneously in remote locations) and on-site
co-facilitators (leveraging the active engagement of face-to-face training). The pedagogy
used for this pilot was to simulate face-to-face training as much as possible. Positive results
included efficient training of 282 teachers with one lead trainer as against 50 teachers in
traditional face-to-face training. Lessons learned from the project included: (i) the lead
facilitator behavior needs to change; (ii) use of cues – visual or auditory – is essential to hold
the attention of remote students; (iii) the technology, particularly the web camera should
allow lead trainers to be on their feet and mobile; (iv) orientation of teachers to the medium
is necessary before training; (v) to further simulate face-to-face training, venues should be
equipped with multiple speakers and cordless microphones and (vi) the optimum number
of participants for this kind of training should be 30–35 in a reasonably-sized room.

**Self-initiated teacher development**

This pilot initiative examined two questions: (i) how are teachers using Facebook and what
benefits are they drawing from it? and (ii) how are these perceived benefits contributing to
the continuing professional development of teachers? In a six-month study, the Teacher
Foundation examined the following issues: (i) Reflection: Are there opportunities for teachers
to reflect on their own classroom practice? (ii) Peer Networking: Do members interact with
peers during the discussion? (iii) Sharing of classroom practice: Are there opportunities
for members to share examples of classroom practice? and (iv) User generated content:
Do teachers initiate a discussion or share interesting and useful content on their own?
The mid-term result shows that there was an increase in the user base from 612 to 1,222,
0.83% of users on average posted feedback, and there was 5% increase in membership
every month. Results suggest that informal professional development on a social network
is self-initiated, and this requires teachers to feel empowered.
Use of Distance Education and Teleconferencing: Possibility for Teacher Education

Speaker: Prof. B. Phalachandra, Wawasan Open University, Penang Malaysia

This presentation explored the roles of distance learning and teleconferencing in teacher education. In India, ICT has been an integral part of teacher training programmes for some time. In 1975, for example, Satellite Instructional Television Experiments (SITE) was established and used for maths and science education, while primary teacher training was done through teleconferencing. IGNOU has also developed ODL programs to address teacher training needs. In 1996, the Distance Education Program (DEP) started as a part of a teacher education programme which involves capacity building of teachers and teacher educators using print, audio and visual material. In 2005, EduSat was launched and it has been equipped with 5,000 terminals-satellites. To date, though EduSat has been used in Bihar only for science and mathematics. EduSat has potential to provide video conferencing, as well as night-time loading and receiving of data. Through EduSat, NCERT conducted a 37-day orientation programme to train teachers on NCF 2005. However, EduSat is still not in full use. Concerns regarding use of teleconferencing include the limited flexibility in programme design. It is thus important to look at the content development process, build capacity of experts and coordinators, maintain the feedback channels conduct ongoing research, ensure optimum use of the network by all involved participants, and maintain hardware to ensure that it is not stolen and remains in working order. There is a need to design programs that enable people to use the technology that is available. Thus, teachers across the country ought to be trained to explore the potential of EduSat for both teachers and students. In order to use teleconferencing effectively, there is a need for self-instructional materials, visual inputs, a lot of individual and group activities, telephone facilities for interaction, and internet connections to interact with a support system.

Cisco in Education: The ICT Experience

Speaker: Mr. Ajay Krishnan, Director Business Development, CISCO

CISCO is a global technology company which carries nearly 70–80% of networking traffic around the world. It started the ‘Inclusive Growth Group’ 15 months ago to provide technology to rural areas to support education, health, skills development, and public services. The initiative uses cloud-base services and a replicable, scalable, granular, modular, and measurable model. It seeks to find technological solutions to virtually transport teachers to rural areas and use this to effect measurable changes. So far, the
A project has taught students across 30 locations, delivering 965 virtual classroom sessions over 310 days. Electricity challenges have been solved through the use of solar panels, and networking supplied by collaborating with Bharat Sanchar to provide links to remote areas. Teachers were initially sceptical, but now act as facilitators or co-coordinators when the remote teacher is teaching. Pilots were conducted in collaboration with SSA & DSERT at nine schools, covering 1,500 students in grades 5–8. Results from the project have demonstrated that participating students have performed better after the intervention, especially in mathematics, science, and English. Dropout rates have also decreased and pass-out rates increased.

SESSION II: Challenges of Teacher Education: The State Perspective
CHAIR: Shri Sunil Kumar, IAS, Secretary, Government of Uttar Pradesh

Meghalaya State Presentation
Speaker: Mr. Frederick Roy Kharkongor, Meghalaya

The state is aiming to train all untrained teachers by the end of 2015 as per the RTE guidelines. To achieve this, 16,000 will be trained through IGNOU, 4,000 by the NIOS teacher training programme, and the remainder through other courses. A key challenge is that there are too few training institutions, especially at the DIET level. Other problems include challenging topography, low teaching capacity, keeping the minimum qualification at 45% in class XII, insufficient time to train all teachers, and a lack of consistent support system for the teachers. To help to alleviate these problems, continuous workshops, good networking with experts, and use of ICT in the form of mobiles or embedded chips can all help to make teacher training easier and more effective.

Gujarat State Presentation
Speaker: Dr. Joshi, Gujarat

In terms of teacher training, Gujarat is doing well, as there are no untrained teachers in the government schools, while only 3% of teachers at private schools are untrained. Good ICT infrastructure, including video/teleconferencing equipment, exists in each institution, while the curriculum was reformed for the primary schools. The enrolment ratio is more than 98%, the dropout rate is decreasing, and distance education activities are provided for upper-primary children three times a week. The only remaining challenge is to improve quality continuously.
Assam State Presentation

Speaker: Gautam Burman, Assam

There are 40,000 untrained teachers in Assam State, but a state-initiated teacher training programme has been initiated for 18,000 of these to date. The NCF has been used as a framework for developing the teacher training curriculum. The main challenge in the state has been a shortage of DIETs, as there are only 18 currently. This means that there are too few seats for trainees in all DIETs. In order to train more teachers, various proposals have been developed to increase the number of training institutions and their capacity. For instance, there is a proposal for increasing the number of students in each DIET from 100 to 150, and the NCTE has also approved five new DIETs. There is also a proposal to open DIETs in all districts of the state, as well as 18 block level offices with a capacity to train 50 teachers each. Further, 25,000 teachers have been recruited recently and another 20,000 will be recruited soon. In addition, the Government of Assam will conduct a Diploma course through ODL to train teachers and to clear its training backlog.

Planning and Preparedness: The Bihar Strategy

Speaker: Dr. A.K. Pandaya, Bihar

Currently, Bihar faces a huge challenge, regarding the number of untrained teachers. The challenge is to train them within the time frame prescribed by RTE. The total number of working teachers is 343,105 while there are 151,896 trained teachers, 191,206 untrained teachers is, and a required for 30,000 new teachers to comply with the RTE mandates. Untrained teachers will be trained through SCERT and the Bihar Board of Open Schooling and Examination. The curriculum is being prepared with support from the World Bank. Upon completion, the curriculum will be shared with the NCTE for approval. After the completion of each year of study, evaluation will be undertaken by the Bihar School Examination Board/BBOSE.
ODL and Teacher Education at the Global level

Speaker: Dr. Nutan Bharti, Program Officer, Commonwealth of Learning, India

The quality of teacher education is directly related to content knowledge, methodology of transaction (face-to-face, ODL, etc.), ‘centeredness’ of context (teacher, learner, environment), and the definition of learning outcomes for socio-economic well-being. Any ODL teacher education programme should focus not only on the quantity of teachers it graduates, but also the quality of education. This can be enhanced through effective conceptual organization of content and use of open educational resources. In terms of the ICT, it is important to explore use of computers, as well as other technologies, including television, radio, telephony, and interactive networks. The Commonwealth of Learning has produced a ‘learning for development’ course which focuses on access and quality with ODL & ICT through Open Education Resources (OER). COL’s intervention for Strengthening Capacity of Teacher Education Institutions uses ODL to increase the outputs and quality of teachers in teacher education programmes.

ICT in School Education: Implications for Teachers at the Secondary Level

Speaker: Ms. Caralyn Deshmukh, Teacher Education, Ministry of Human Resource and Development

ICT policy in school education in India aims at preparing youth to participate creatively in the establishment, sustenance, and growth of the knowledge society leading to socio-economic development of the nation and increased global competitiveness. There are three goals: (i) create an environment of collaboration, cooperation and sharing, conducive to optimal use of, and returns on, ICT investments in education; (ii) motivate wider participation of all sections of society in strengthening the school education process through appropriate use of ICT and (iii) promote universal, equitable, open and free access to state of the art ICT and ICT-enabled tools and resources to all stakeholders. To support these goals, various initiatives are in place:
- ICT @ school scheme – this has evolved from the 1990s. The Scheme supports ICT infrastructure procurement, as well as maintenance, running costs, software and e-content, and teacher training costs. In all, 190,643 primary schools and 94,752 Secondary and Senior Secondary schools have been covered under the Scheme.
- RMSA – RMSA ensures access to secondary education to young people from age 14–16, with emphasis on quality and equity, upgrading of upper primary schools, opening of new schools, and strengthening of existing secondary schools.
- ICT in schools – Here, a model curriculum for ICT is to be developed by NCERT.

The potential of ICT in teacher education includes use of ICT in teacher resource management and administration, sharing and dissemination of a digital pool of learning resources, teacher capacity building, ongoing teacher support, establishment of a common platform or forum for Teacher Groups, and deployment of tools for evaluation and assessment, lesson plans and teaching. Challenges and issues include concerns of reach and access, lack of ICT capacity in teacher training and teacher education institutions, lack of ICT curriculum framework for teacher training, governance issues, and limited budgets.

### The Private Sector in ICT: A View from the Other Side

**Speaker:** Mr. Saumya Kanti, *Director*, Educomp

Educomp has engaged in teaching and learning, capacity building of teachers, assessment and governance, and currently partners with 14 states. The Educomp Smart Class is in 12,600 schools across the country. The initiative is implemented in collaboration with State governments. For example, in Haryana state, 14 days of in-service training program was provided to 33,000 teachers across the state. The course included training on RTE, CCE, bridge course and content. This experience has demonstrated that development of an e-learning culture requires engagement of learners, teachers and administrators as key stakeholders.

### Teacher Education through School-based Support (TESS) India

**Speakers:** Sangeeta Dey, *Education Advisor*, DfID

Steven Hutchison, *Head of Department*, Department of Education, The Open University, UK

The problem of teacher education is two dimensional: huge teacher shortages and poor teacher quality. TESS India is a sister project of the Teacher Education in Sub-Saharan Africa (TESSA) Initiative.
The Open University of the UK is initiating the TESS India project by leveraging its experience in ‘English in Action’ and TESSA, as well as its extensive Indian network. TESS-India is an innovative approach based on collaboration and partnership with the Ministry of Human Resource Development (MHRD) and state governments. The strategic focus and core principles of the project include: (i) complementing and enhancing in-service training; (ii) availability of classroom-practice based units for teacher educators and teachers for India; (iii) availability of web-based, print, CD and audio-video lessons and (iv) focus on both the elementary and secondary levels. The time frame for the project is three years, from 2012 to 2015 and currently it is operating in seven states, including Assam, Bihar, UP, MP, Karnataka and West Bengal.

SESSION IV: Group Work and Presentation – International and Country Experiences – Part II

CHAIR: Prof. Steven Hutchinson, Head of Department, Department of Education, The Open University, UK

Developing leadership of ICT in Schools

Speaker: Mr. David Hassel, National College for School Leadership

Leadership has been recognized as a key issue in use of ICT in school, and thus it is important to create leaders/teachers who develop e-confident or e-mature organizations. Strategic Leadership of ICT (SLICT) was launched in 2001 by the National College of School Leadership to respond to this need. The concept is visualized in the figure below:

**FIGURE 3: Strategic Leadership of ICT (SLICT) Concept**
The programme runs for 10–12 weeks, providing content, challenges and support, followed by ongoing engagement during implementation. The programme uses mixed learning styles and approaches, has continuous facilitated online support (including ongoing membership after the programme) and focuses on leaders (head teachers/principals). SLICT is not an ICT skills course, but rather focuses on online and offline self-reflection and development of e-confidence. It includes a 2.5 day residential programme incorporating school visits, reflection and debates with peers, sharing of experience combined with expert inputs, and use of ICT in a curriculum-focused environment. The SLICT started with 150 heads in 2001, and had trained 13,000 heads by 2006. This activity has illustrated that there is a need to build upon existing teaching standards and help teachers to move towards a more self-reflexive mode of monitoring. The National College of School Leadership suggests that there should be more parental engagement in monitoring and evaluation, self-review and teacher review should be placed at schools, networks among teacher coordinators and leading teachers should be developed, and local governments and other organizations in the field of teacher education should participate in teacher education activities.

Open Distance Learning (ODL) material for open schooling

Speaker: Mr. Dinesh Singh Bist, CEO, Bihar Board of Open Schooling and Examination (BBOSE)

BBOSE is an open and distance learning institution at school level set up by the Government of Bihar in August, 2011. The missions of BBOSE are to: (i) provide modern, open and flexible, and life-related educational opportunities to those who cannot attend a regular school; (ii) increase access with equity in education and ensure social justice; (iii) universalize education of high quality and (iv) provide meaningful skill development/vocational education leading to sustainable livelihood opportunities. The objectives of the organization are to: (i) contribute to the national goal of universalization of education by improving access to school education through a high quality system of open schooling; (ii) function as an examination board and certify its courses for academic, vocational, and teachers’ training; and (iii) design and develop ICT and OERs that support quality education. The school especially targets girls and women, socio-religious communities, and teachers to be trained under the RTE Act. Programmes include open basic education (elementary education), secondary education, senior secondary education, open vocational education program/open skill development and upgrading, teacher training, education for differently abled learners, and continuing education and life enrichment. Learning material for primary course will be developed by SCERT, and converted into self-learning material by BBOSE. Supervision of programmes is done by academic facilitators, and evaluation is done by BBOSE. Key challenges are: (i) setting up and organizing BBOSE from scratch, (ii) doing materials development while overcoming copyright issues and payment of royalties; (iii) the requirement for appropriate human resources (lack of locally available trained and experienced staff in ODL) and (iv) infrastructural support.
Training Needs Assessment in Large Scale Training Programmes

**Speaker:** Ms. Vyjayanthi Sankar, *Vice President – Large Scale Assessments, Education Initiatives*

The quality of an education system cannot exceed the quality of its teacher. The only way to improve outcomes is to enable teachers to become more effective. The rationale for conducting Teacher Needs Assessments (TNA) is that teachers are found to have gaps in content knowledge, teaching methods, pedagogical practices and knowledge of what their children can do. The benefits of TNA include: (i) understanding what teachers know; (ii) teacher training can be based on actual needs; (iii) teaching training budgets/efforts can be used efficiently; (iv) ensuring that teacher gaps do not lead to student learning gaps; (v) improving overall effectiveness of teaching process and (vi) understanding what teachers know. Areas typically covered in TNA are general ability, subject content, subject pedagogy, and information on needs as perceived by the teacher. Next steps after TNA would be:

- Strengthening pre-service and in-service teacher education curriculum based on specific recommendations on the teacher strengths and weaknesses.
- Strengthening student curriculum and textbooks to address and compensate for the misconceptions and gaps found among teachers.
- Building capacity of teachers in a targeted manner through a series of subject-specific workshops that provide deeper conceptual understanding and improved pedagogical practices.
- Implementing systems to ensure that each teacher gets training based on their individual needs.

Mobile Telephony and Innovative Solutions to Teacher Education – the ‘English in Action’ Project

**Speaker:** Mr. Tom Power, *Senior Lecturer in Teacher Education and Development, UKOU*

Teachers are often isolated from resources, support and networking with professionals. ‘English in Action’ is a project which provides new classroom activities for teacher and students. Teachers need to be made aware of using techniques like role-playing, drawing and etc, and can be supported through the use of audio support with the help of mobile phones. The project provided professional development materials for teachers and classroom, new tools and peer support. Teachers were able to do co-teaching, talk to each other to learn how to teach, or listen to audio programme to learn how to teach. Four types of support were provided: (i) peer support through meetings and visits; (ii) mobile phone: audio for classroom use; (iii) allowing teachers to be creative about how to use existing materials and (iv) video on teacher development.
THOUGHT PROVOKER

One Laptop Per Child (OLPC) – Application for Teacher Education

Speaker: Dr. Satish Jha, President & CEO, OLPC (One Laptop Per Child) India Foundation, India

Challenges of quality and adequacy are major concerns in schooling. More of the same will not enable India’s children to compete effectively for opportunities in 2020. Thus, OLPC aimed to make a technology so friendly so that a child can start using it without any adult aid. OLPC is a technology designed to help underprivileged children access sustainable education that is synchronized with today’s needs. OLPC is a rugged, low-cost, low-power, connected laptop with content and software designed for collaborative, joyful, self-empowered learning tool. The tool is capable of transforming the way a child ‘learns’ by combining technology and pedagogy. Some of the features unique to the OLPC laptop are: (i) low power consumption of 2 watts; (ii) networking without internet; (iii) water proof keyboard; (iv) stringent ROHS norms; (v) dual-mode operation; (vi) sunlight friendly; (vii) wi-fi mesh networking and (viii) eclectic power that can be produced either manually (through a wind-up mechanism) and through solar energy.

Teacher Management

Speaker: Dr. Renu Singh, Save the Children

The objective of the initiative of Save the Children is to build capacities at the national and state level institutions and education department in India by identifying and revising international models of best practices in the areas of teacher cadre management,
school management, and leadership, with a particular emphasis on inclusive education in a decentralized context. Inclusive education consists of two processes: (i) increasing participation in learning and (ii) identifying and reducing/removing barriers inhibiting learners from learning and participating. The project covers seven states, including Andhra Pradesh, Delhi, Gujarat, Jammu and Kashmir, Rajasthan, Orissa and Himachal Pradesh. National-level studies have been conducted on teacher cadre management and school based management. Constituents of these studies include state committees, district committees, and village committees. As a result of study visits, seven states have started reforms. Delhi and Himachal Pradesh now include school leadership, Andhra Pradesh wants to include inclusive model schools, and Orissa wants to improve learning standards. Currently, save the children has completed baseline surveys in all schools and Management Information Systems (MIS) reviews in the states. It will come up with an example curriculum for pre- and in-service teacher training and will try to institutionalize these reforms.

**Results from Group Discussions**

Participants were divided into five groups throughout the conference to work in pre-assigned discussion topics and identify implementable actions. Detailed reports were prepared from each discussion group, which are presented in Annex 1. A short summary of each group’s discussion is presented below:

**Curriculum Framework**

Currently, the state personnel have already developed a suitable programme curriculum. Therefore, the priority is to consider how this curriculum can be delivered via ODL. It is important in this regard to look at models of curriculum available from IGNOU, NIOS, NCTE and Bihar MHRD, amongst others. The next priority is to select relevant content for developing ODL material that can be used in the teacher training programme to provide certification to untrained working teachers in Bihar. The material should include a lot of examples and experiences and not just theoretical content.

**Development of Learning Materials**

The group considered the role of ICT materials in the context of Bihar. Four answers emerged: (i) capture and communicate the paradigm shift; (ii) enhance teachers’ competency; (iii) enhance teachers’ capacity to implement pedagogy and (iv) the curriculum should be created for all stakeholders and for teachers. Advantages of ICT compared to print materials are the ability to communicate in a visual form and enable learners to construct their own knowledge. The group identified four steps in material development:

- Identification of team: the team should be comprised of people from different sections and layers. They need to be oriented in a number of aspects and agree on roles and responsibilities. The team approach assumes that people have certain qualifications and understanding of the topic.
Pre-development: In this stage, the curriculum is converted into a course structure. It is also important to understand teachers and assess their needs, agree on the role and needs of materials, survey available materials and identify materials and put them into a framework and learning flow.

Development: this comprises development of sample materials, conducting ‘field tests’ for feedback, further development of materials and finalization of the Year 1 “package”.

Post-development: Dissemination of material and creation of a mechanism to get feedback.

DE Strategy and Hardware Architecture

Teacher education via ODL should enable teachers to see examples that they can model and should support good learning activities, including peer learning opportunities. In order to achieve these objectives, the group recommended providing access to a wider network for resources while enabling teachers to make their own choices and create their own learning materials. It is also important to provide ICT infrastructure that can support the teacher educators. In terms of stakeholder engagement, overall coordination and support at state, district, block, and institutions levels are needed. It is important to equip SCERT, and District level Co-ordination and Support Centres with broadband networks and tiered caches to enable provision of support to DIET and BRC teacher educators, sharing collected OER resources, and access to wider resources and networks. It is also necessary to equip teacher trainees with laptops and video-conferencing capabilities, to facilitate communication and resource development. Also, it is recommended to provide broadband connections and wi-fi hotspots to provide access for teachers. The project should tap solar energy wherever possible, and allocate coordinators to be in touch with the CRCs and BRCs. The group considered the range of hardware that teachers can use: tablet computers and similar devices, use of OLPC, iPads and laptops. The group recommended equipping teachers with mobile technologies for professional learning and classroom practice. Depend upon budgetary constraints, either tablet computers (for accessing materials) or OLPC (for accessing, creating and sharing materials) might be recommended.

Delivery of Materials and learner support system

Five principles for the material delivery and learner support system were identified:

1. Collaborative learning is very important and ICT can support this.
2. The most effective development is close to classroom. ICT can bring support close to the teacher in the classroom.
3. A wide range of team members is required to devise learning support strategies. This team should represent different voices – district, state, block, and teacher level.
4. It is important to pilot different distribution mechanisms.
5. There needs to be regular sharing and reflective meetings.

Three action areas are recommended: (i) provision of capacity building throughout the system and engagement of people in designing, testing and implementing; (ii) recruitment of teaching champions who have good interpersonal skills and are close to classroom realities and (iii) creation of a system to enable the voices of teachers to be heard when designing the curriculum. In order to achieve these, the group noted the importance of taking contextual realities into account, a need for alternative approaches to provide
teachers access to audio/video resources, and the assessment of current teacher support systems in the classroom to identify areas of improvement.

Monitoring and Evaluation

The key principle of monitoring and evaluation is that the design of monitoring and evaluation cannot be separated from design of the overall project. It has to be integrated. Therefore, from the beginning, substantial time and resources should be allocated for monitoring and evaluation (at least 5%). The number of success indicators should be limited and be embedded in the curriculum. A Management Information System (MIS) should be designed and integrated into the project. It is important to look at indicators across the spectrum. For example, indicators need to look not only at classroom practices, but also teachers’ competency. When implementing evaluation, triangulation through multiple sources of data is needed, and it is also critical to design ongoing evaluation exercises, including internal evaluation, which should happen regularly. Finally, after evaluations are completed, lessons and research should be shared with the wider world.

Summary and Key Takeaways for Teacher Education using ICT and ODL

**Speaker:** Dr. Shabnam Sinha, Senior Education and Institutional Development Specialist, Task Team Leader The World Bank

The objective of the conference was to generate ideas on how to deliver teacher training in Bihar using ICT and ODL. Deliberations focused on material production and media selection, as well as production and dissemination strategies. The Conference considered alternative strategies to train teachers effectively – for example, use of OLPC, mobile phones, and other innovative delivery methodologies. Areas of discussion started at policy level and were then taken to a practical level. Both the Indian and international contexts were discussed, while group sessions on implementable actions took place. Key issues discussed include national interventions in ICT, distance education in India, curriculum and statutory requirements, building on existing experience and materials, institutional contributions, innovative technologies, non-traditional training for larger gains, non-government and private sector inputs, state experiences, and training needs analysis. Through this exploration, the Conference has generated a wide range of excellent ideas that will inform the development and implementation of effective teacher education in Bihar. Dr. Sinha extended thanks to the Government of Bihar for supporting and participating in the workshop, and assured all delegates that rapid progress will be made to implement a highly successful project.
Addressing the Issue of Numbers: Next Steps for Bihar

Speaker: Dr. Amarjeet Sinha, Principal Secretary, Department of Human Resource Development, Government of Bihar

Dr. Sinha provided assurances that everything discussed in the Conference would be taken seriously and sincerely, but noted that a strong team is required to implement any action. This needs to involve experienced teachers. Removing the chasm between teacher educators and teachers is also important. Systems of assessment need to focus on classroom practice, as it is the experience of learning in the classroom that needs to be changed. Ensuring the standard of quality in schools and setting up basic benchmarking of achievement will help to achieve this. It is also important to build confidence in self-evaluation to principals, as they are likely to ensure quality in schools.

Valedictory Address

Speaker: Shri P. K. Shahi, Honourable Minister for Human Resource Development, Government of Bihar

Experience in the last six years has demonstrated that there has been a tremendous increase in the number of students and an accompanying deficit of teachers to teach them in an appropriate manner. The biggest challenge we are facing is attendance of children at schools. One of the reasons for students not coming is that the classroom experience is not attractive. How should we attract them to classes without any pressure? The entire paradigm of education is undergoing change, and it is thus essential to use modern techniques to teach. We should not only meet the requirements and challenges we are facing today, but shape something which the State may be able to use in future. Teachers are very important for students, and Bihar is a place of great experiment, with 20 million children enrolled in the primary school. ICT provides tools to take forward teacher education effectively in this regard. If the experiment is successful here, it would be successful anywhere. The World Bank and European Union have been very responsive, and the State expects a long-term association with the Bank during project implementation to achieve the goal of educating and recruiting excellent teachers in Bihar.
Vote of Thanks

Speaker: Ms. Shagun Mehrotra, Education Advisor, European Union

Ms. Mehrotra extended thanks to the Government of Bihar for supporting the conference, as well as to national and international participants for insightful presentations. He noted particular appreciation for the group work and solutions emerging from the presentations and discussions.

Key Conference Messages

As this report demonstrates, the three-day Conference generated a wealth of excellent information and insights to guide effective implementation of teacher education using ICT and ODL. Key messages emerging across the Conference to be taken into account during programme planning are as follows:

1) Given the challenges facing the State of Bihar, there are many innovative educational strategies and approaches that have been deployed, both in India and around the world that can be effectively harnessed to solve the problem of certifying teachers in the State. New ICT tools, in particular, offer innovative options for finding creative solutions to the State’s challenges.

2) The design and selection of educational strategies and blend of learning methodologies in any teacher certification programme needs to take into account contextual realities in Bihar. Any use of technology identified must be designed to work successfully even in the most challenging rural environments in the State, and should accommodate the ICT proficiency levels of students and teacher educators alike.

3) Implementation of a teacher certification programme in Bihar needs to focus strongly on developing institutional capacity for ongoing teacher education in the State that can be sustained well beyond the life of the project.

4) Although ICT and ODL provide excellent strategies for solving the challenge of teacher education in the State, it is noted that ODL has historically faced immense challenges when it has not included sufficient student support. Because of this, it is essential to ensure that effective use of face-to-face sessions and interaction is integrated into the design of the programme.

5) There is wealth of existing expertise, content (particularly open educational resources) and other valuable resources available, both within India and internationally. This should all be harnessed during programme development, both to accelerate the development process and to ensure that the programme builds on the best of what is available locally and globally.

6) There is strong commitment from all key players represented in the Conference to ensure that a high quality, innovative ICT-based teacher education programme is developed and delivered in Bihar, which simultaneously focuses on building effective institutional capacity and accompanying ICT infrastructure within the State for ongoing teacher professional development.
Group 1: Curriculum Framework and its transaction

Moderator: Prof. B. Phalachandra

Objectives

- Look at the models of curriculum available to us from IGNOU, NIOS, NCTE and BIHAR Dept.
- Pick relevant material for developing ODL material that can be used in the teacher training programme to provide certification to untrained working teachers in Bihar.
- Draw implications from the various models to enrich the proposed model of curriculum.

Concerns Raised

- Relevance of using the same modules of training for newly recruited and untrained teachers.
- The proposed model is based on a face-to-face teaching model. How will this be adapted to suit the needs of distance learning teachers?
- How does the model balance marks in theory and practical papers and what would be the criteria of distribution?
- Papers should be reflective of the educational concerns we have for teacher training of the backlog of teachers.
- The model ought to be fair to the ten non-negotiable areas stated in the RTE act.
- Can there be any modifications regarding the organisation of the subjects in the proposed model?
- How can we accommodate the experience of the working untrained teachers within the model?
What would be the instructional methodology for implementing such a model through ODL that seeks to bring the untrained teachers to a par with newly recruited teachers who receive teacher training?

Incorporation of a rigorous action research component for in-service teacher trainees.

Is it possible to increase the duration of the course?

Is there a possibility of having a workshop based model programme?

How can we have a blended approach of both a face-to-face and ODL based teacher training model?

**Action Plan**

- Develop guidelines for curriculum.
- Need to re-look at the distribution of marks in assessment; 50% to theory and 50% to practical.
- Bring the component of CCE within the teacher training curriculum.
- Reorganize and shift syllabus/content spread over the two years for content enrichment of the teachers and ensure capacity building.
- Contextualize the content to make it Bihar specific.
- Use of ODL in the teacher training model developed and how it would be used specifically in comparison to the face-to-face programme.
- Specification of the use of ICT built in the syllabus.
- Guidelines/Principles ought to be given for the development of materials as part of the curriculum guidelines.

**Group 2: Development of Learning Materials**

**Moderator:** Mr. Subir Shukla

**Role of Material**

- *Capturing and communicating the paradigm shift:* Define the ‘new’ or ‘change’ or ‘paradigm shift’ – e.g. NCF/BCF/RTE quality requirement or understanding of subjects, shift from behaviorist to constructivist pedagogy.
- *Increasing teachers’ competence:* Build teachers’ understanding of the subject, their content knowledge and capabilities within the subject in light of contemporary understanding.
- *Enabling improved performance of teachers:* Increase understanding of and practice in the required pedagogy, awareness of performance standards and indicators, as well as their ‘roll out.’
- *Enhancing the likelihood of teacher ‘effectiveness’: Enable all stakeholders to support teachers by generating material for head teachers, supervisors and school inspectors, SMCs, and administrators.

We need to take into account:

- The role of the material
- How it should be developed
How it will be used
How it will be assessed

We should first focus on outcomes, principles, and what we want to get out of the materials.

Advantages of ICT Material

- Use visuals; e.g. video lessons demonstrate what can actually be done, or dynamic visuals of shapes enable children to combine different shapes to come up with new ones.
- Can be interactive, two-sided (though a lot depends on who is on the other side).
- Can enable a ‘community of learners’ to come about: e.g. TESSA OER material is hosted on the web and can be modified by students to make their own model/module and put back.
- Material can take the learner to the mastery level through the greater range and more dynamic as well as higher level exposure, and opportunities to act or do (with their minds).
- Videos of classroom practice can help teachers plan better.
- Connectivity dramatically expands the potential of ICT material.
- ICT Materials can facilitate the improvement of:
  - Relationships: by making learners think, sympathize with others (e.g. if we choose ‘characters’ they can relate with), make evident (e.g. in video about classroom practices) the kind of relationships that are desired and inviting teachers to reflect on them. Also, if the material is such that children and teachers learn something together, it will have a significant impact.
  - Processes: by actually using constructivist pedagogy; encouraging the learner to struggle with, discover, form her own opinion and justify it, and so on.
  - Outcomes: by focusing on higher order outcomes, or emphasizing those outcomes that really matter (but are often ignored) such as critical thinking, creativity and the like.

Principles

- Reflective teachers.
- Use of Universal Design Principles (UDL) in architecture – increase accessibility by a range of people, including those with limited access to language.
- Enable children to want to stay in school.
- Relevance (for my life, needs).
- Fitness to context (including the awareness that in different contexts, things work differently).
- Fitness to purpose.
- Fitness to needs.
- Develop curiosity; avoid giving ‘finished’ knowledge, with fixed positions; it would be helpful to give options, enable learners to choose, give their reasons and so on.
- Have a range of perspectives rather than a single one.
Issues of diversity; we not only respect diversity, but see it as vital to making a vibrant, effective classroom. Address issues of bias that exist in society. How do we make people reflect on their beliefs and assumptions, and their behavior, or discover their own biases? Let the material help in self-learning and self-discovery.

Flexibility, adaptability and learner ‘control’ over material and learning.

Enable constructivist learning, including collaborative learning.

Teachers need to focus on children, childhood; our material needs to make them sensitive to this. Often material focuses more on subjects and less on children.

Qualities of materials

- Material should not only include philosophy, but also give concrete examples.
- It is important to have contemporary and future-looking material, in line with where we want to go. (The developers too need to be curious about knowledge, about the direction in which it is going to grow. Knowledge is not finite, and provision for this growth needs to be built in).
- The language needs to be easily understood.
- SLM – should have scope for learners to add and evolve.
- Collaborative nature of material – can different learners work together on it?
- Enable teacher to emerge as co-creator of her own curriculum and learning.
- Material should enable the teacher to effectively communicate with children.
- Should not be chapter-based but based on learning outcomes (from the curriculum, rather than the syllabus).
- Should not make teacher feel that, without ICT use in class, learning cannot be enabled.
- Should make possible shifts in pedagogy and transition in classroom/school.
- Enable teachers to address all the possible situations that s/he will face in the class (e.g. questions that children might ask and what to do about them).
- How can the material make a more reflective teacher?

Steps

Identification and Orientation of Team

- Team should be comprised of different sections – teachers, children, teacher educators, technology experts, subject experts and university academics, community people, technology experts, and language experts if needed. Decide on the basis of the nature/content of the material to be produced. A gender and regional balance should also be maintained so that we have a broad-based group. A mix of experienced and ‘fresh’ members may also be considered.
- A selection procedure (test? Workshop? Interaction?) needs to be worked out. It could include feedback from teachers.
- The team would need to understand the Bihar Curriculum Framework (BCF) and its approach. Orientation is required on creativity, conceptualization, visualization – across different media, and subjects (new understanding).
- Inputs from ICT experts, those who know ODL – on the use of technology to empower teachers.
A ToR, roles and responsibilities and a time frame would need to be thrashed out, agreed upon and signed.

With respect to team formation, the following key assumptions and obstacles have been mapped:

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Possible obstacles</th>
<th>How to overcome</th>
<th>Indicators of Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>People with the requisite qualifications (M.Ed., M.A.-Ed) will actually understand education and pedagogy. They will be eager to learn and willing to be oriented. People selected will actually be able to do (and complete) the work they are selected to do. There will be Resource Persons who can undertake workshop based selection process. Specific teams to handle administrative, accounts and logistical requirements will be available. This work will be declared a state priority. There will be political and systemic support, leadership support. People will not be transferred. Required equipment and funds will be available.</td>
<td>Difficult for people to take time away from their departments. Accommodation and logistics facilities at the SCERT may be inadequate. Electricity, drinking water, toilets, maintenance, cleaning etc. Space for Resource Centre.</td>
<td>Administrative orders to release required personnel. Logistical support (generator, water filter, etc.) Declaration of the task as a state priority. Arrange for logistics, admin and accounts teams. Development of Resource centre.</td>
<td>Team selected and in place. General acceptance of selection process and people selected. Support as indicated in previous column.</td>
</tr>
</tbody>
</table>

Pre-Development Phase

- Curriculum → course
  - Look at the curriculum, and see what kind of requirements the curriculum has.
  - Convert to Course Structure → objectives, outcomes, sequence, learning flow.
  - Agree on the methodology by which teachers will learn constructivist methods (also be clear on what should be avoided).
Understand teachers:
- Sample surveys, FGDs, observations to understand teachers’ situation better. What is their present level of understanding, exposure, competence, performance and effectiveness? Their backgrounds, what they read. Their experiences.

Assess needs:
- Identify needs. By looking at the teacher and the expectations from him.
- Needs may be related to all areas, paradigm shift, pedagogy, support needed from others, etc.
- This should be evidence based, and give as a baseline. Process for the needs to be defined.

Agree on role/need of material:
- Agree on the role of the material in this process; based on this, begin preliminary discussion on the nature of material – for both teachers and trainers. Identify some of the key categories of material needed.
- Decide on the media mix required.
- Don’t give up on ‘old’ options such as radio (perhaps morph into community radio on FM, which can be heard even on mobile phones?).

Survey of available materials:
- What kinds of materials already exist? What have been the responses to them till now?
- Collect the resources (materials) available (in India and other countries as well) pertaining to our needs.
- Analysis of available material.
- Strategies for mapping available material.
- Put together what is already there in the state.
- Create a knowledge platform – obtain the support of a knowledge management consultant to detail this out.
- SCERT as the hub or repository or resource centre.
- To know about materials in other parts of the world – use the internet.
- Also tap non-resident Biharis.
- Get the help of DPs’ offices in other countries.
- Undertake a structured process of going through this material, documenting it according to a matrix.

Identify materials needed, put these in a frame/Learning flow.

Based on curriculum, needs, course structure, identify:
- Materials that can be readily used.
- Materials that can be adapted and used.
- Materials that need to be developed from scratch.
- Other support elements that might be needed (e.g. guide on how to use materials).
- In case applicable, identify the categories of material required.
With respect to the pre-development phase, the following key assumptions and obstacles have been mapped:

<table>
<thead>
<tr>
<th>Assumptions</th>
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<th>Indicators of Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core group and all 200 people for developing material are in place.</td>
<td>Knowledge management consultant may not be readily available.</td>
<td>Consult institutions/organizations which have space for venues and accommodation.</td>
<td>Development of a common vision.</td>
</tr>
<tr>
<td>Members of core group and material development group will be competent.</td>
<td>Venue availability is a problem.</td>
<td>There will be a person from each sub-group who will be appointed full time.</td>
<td>Development of a conceptual framework which will be owned by government/all of us.</td>
</tr>
<tr>
<td>Budget allocation – funds will be available.</td>
<td>Identification of experts who will prepare the training module and conduct the training for 200 persons.</td>
<td>Hire a full time consultant.</td>
<td>Enthusiasm till the end.</td>
</tr>
<tr>
<td>Key personnel will not be transferred.</td>
<td>Need to identify a group of experts who understand both ICT and pedagogy.</td>
<td>Requirement of a good translator.</td>
<td>Appreciation and recognition of work and people, institutions involved.</td>
</tr>
<tr>
<td>Political willingness will continue and this will remain a PRIORITY for the government.</td>
<td>Core group and overall team members may not give sufficient time, especially because they are involved in other activities as well.</td>
<td>After development of material, team will need support in terms of typing, composing, and production.</td>
<td></td>
</tr>
<tr>
<td>There will be such experts in the core group who are well conversed with ICT and educational pedagogy.</td>
<td>Most of the quality materials are in English, while our medium is Hindi.</td>
<td>Strategy planning for financial flow and administration.</td>
<td></td>
</tr>
<tr>
<td>Members of core group and 200 persons will be committed and give sufficient time.</td>
<td>Composing and typing of developed material.</td>
<td></td>
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<tr>
<td></td>
<td>Problems of fund flow.</td>
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</table>

Development phase

- Develop exemplars:
  - Make a few exemplars for the key categories (rather than starting on full-scale material development).
  - Agree upon the overall structure for each ‘unit’ of learning; in terms of ‘outline’ or frame. Identify the different communication/learning methodologies to be used – then make a few exemplars.

- ‘Field test’ or ‘feedback’ on exemplars (rapid):
  - Get feedback on draft material – from users, teacher educators, teachers; + on basis of observation of classroom, transaction, and also on impact on children’s learning.
  - Improve the exemplar.
  - Based on this, finalize a set of guidelines.

- Test the dissemination strategy.
Develop the materials:
- Create the material.
- Work in small teams.
- Editorial teams put together the work of small teams.
- Get continuous feedback to the extent possible.

Finalize the Year 1 ‘package’:
- Finalize the learning package.
- Do a quick review of the material as a package, peer review.

With respect to the development phase, the following key assumptions and obstacles have been mapped:

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Possible obstacles</th>
<th>How to overcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts in content, pedagogy and ICT are available, in adequate numbers.</td>
<td>Adequate numbers of experts capable of preparing ICT friendly material are not available.</td>
<td>Involve outside experts to train the team.</td>
</tr>
<tr>
<td>Sample materials for training teachers through ICT are available.</td>
<td>Dedicated person to visualize, illustrate, and edit for preparing new type of material are not available.</td>
<td>Identify illustrators, people who visualize; let them work on an output basis rather than time basis.</td>
</tr>
<tr>
<td>Hardware facilities are available for using ICT in training.</td>
<td>Blending of content and pedagogy might not take place in the material produced.</td>
<td>Involve proficient teachers in the development process.</td>
</tr>
<tr>
<td>The stakeholders are ready to undergo training through the e-learning mode.</td>
<td>Getting genuine feedback on the units prepared will be difficult. The language used might be difficult and unpalatable for learners.</td>
<td>Get feedback from teachers known to be committed and sincere (rather than those who can be spared by HM).</td>
</tr>
<tr>
<td>Curriculum framework for the training package is ready so that material preparation can be undertaken right away.</td>
<td></td>
<td>Language experts to be included to take care of linguistic difficulties.</td>
</tr>
</tbody>
</table>

Post development

- Disseminate, initiate use, and start getting feedback:
  - Implementation during the first year will be the pilot.
  - While the overall learning framework will be developed as a whole, the material itself will be developed in phases. While the first year’s material is being developed and implemented (and feedback on it collected), the second year’s material development will begin.
  - Put in place a feedback mechanism and a way to continue improving.

- Orientation of facilitators:
  - Most of the learning will be of the self-learning kind, and facilitators’ role will be more in terms of support, discussion, contact sessions, Q&A, etc.
Facilitators will meet, share issues, and get oriented. Generally, a limited role is envisaged for facilitators.

Facilitators help a learning community to come about.

**Group 3: Distance Education Strategy and Hardware Architecture Group**

**Moderator:** Tom Power

**Framing and top level assumptions**

**Principle**

We start with the DL strategy, then work towards enabling/supporting hardware that supports the strategy. In order to understand 'how we can use the hardware architecture for innovation', we want clarity on the kind of distance learning innovation in which we want teachers to participate.

**Context**

We take as a starting point, the Honourable Chief Ministers observation, repeated by the Director of Secondary Education and SSA: "we provide schools, teachers, free school meals and even scholarships to many or even most students. Enrolment has increased, but attendance and retention are poor. Why don't children come to school?"

There were several factors identified within school, including lack of relevance of curriculum, un-interesting teaching practices, absentee or disengaged teachers, gender discrimination, and a need for children to be treated with respect. There are additional out of school factors.

Issues of low attendance or engagement with school may apply to teachers as well. The group notes a need for greater monitoring and accountability. We also note earlier presentations that observed many teachers were unsure of their curriculum knowledge, and had limited pedagogic toolkits to draw upon. These two factors are felt to limit the intrinsic reward of teachers' practice. It was noted that many teachers had only experienced limited rote learning strategies in their own education or professional learning.

**What kind of innovative distance learning strategy is required?**

A number of key attributes were identified. The strategy should:

- Provide models of good practice to teachers, being carried out by their peers, in schools in similar contexts to their own.
- Enable teachers to participate in effective learning experiences themselves, characterised by respect, their knowledge and experiences being valued, and being given space to consider and explore new ideas with the support of their peers.
- Use a school based teacher development and support model.
- Include head teachers, and have aspects of improving school leadership.
- Relate to and involve the wider local educational system, including CRC’s, DIETs and so forth, including teacher educators.
What teachers should be able to do using technology

- View videos of good classroom practice and reflect on them.
- Use technology for doing practice exercises in their respective subjects.
- Conduct self-assessments to enhance their own subject capability.
- Engage with their students in warm, constructive ways.
- Use ICT for planning and documenting lessons.
- Use classroom technologies – mobile, laptop, computer & LCD – for ensuring effective student learning.
- Share and network with peers and colleagues on professional issues within the cluster, block and across the district and state.

The group assumed that the training for those using ICT (both the providers and trainees) as part of the programme would be trained and supported effectively, and that this would be covered by the project design. It has not been covered in this brief. It is felt the technology employed should ensure that it can support the programme delivery and administration as well as in the development of individual skills. It was also felt that the approach adopted should ensure that it is not technology vendor-driven in the software arena which should look to employ Open Educational Resources (OERs) and open-source materials, not to spend money on new content/software. While we want to encourage teacher to exploit OERs, the group feels it is important for teachers to be encouraged to adapt and create their own resources.

Planning

The table below illustrates the structure of the organisations and their roles and the proposed equipment, with notes about the options that might be available. This table is based on an assumption that the structure has to match the planned training structure in the proposal. It is also assumed that funding would be available. This would need to be adjusted if it were to change. It also includes some potential extensions. It has not been mentioned, but it is assumed that a formal procurement will be carried out following a detailed needs analysis.

<table>
<thead>
<tr>
<th>Location</th>
<th>Role</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCERT (1)</td>
<td>Hub for programme management, delivery, and coordination</td>
<td>Broadband network with wi-fi and relevant networking hub</td>
</tr>
<tr>
<td>Studio for distance training</td>
<td>Management Information System and project/administrative software with appropriate online community, sharing content and communication tools, which should include the video training platform</td>
<td></td>
</tr>
<tr>
<td>Curation of locally developed resources and gaining access to national/international material</td>
<td>Studio to include appropriate camera and support equipment for generating video material and training, including appropriate video editing computer</td>
<td></td>
</tr>
<tr>
<td>Core training of ‘lead’ trainers who work in other areas for district and block level</td>
<td>Online UPS with a minimum capacity of 2 hours, possibly generator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Digital library (leveraging national services), not to replicate but complement other services and to provide some back-up. This would also manage a content sharing service for the State</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laptop for key staff with capacity for video conferencing and projector</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Role</td>
<td>Equipment</td>
</tr>
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</tr>
<tr>
<td>DIET (24) and PTEC (36)</td>
<td>District support centres with staff providing a range of monitoring, support, mentoring and training for BRC staff</td>
<td>Broadband network with wi-fi&lt;br&gt;UPS&lt;br&gt;Linked hierarchical caching capacity&lt;br&gt;Solar back up&lt;br&gt;Laptop for lead trainers with capacity for video conferencing&lt;br&gt;Conferencing system, with cameras, speakers, cordless microphones and projector</td>
</tr>
<tr>
<td>BRC (534)</td>
<td>Delivering the major components of F2F teacher education&lt;br&gt;Mentoring and supporting local teacher meetings</td>
<td>Broadband network with wi-fi, preferably wi-max&lt;br&gt;Linked hierarchical caching capacity&lt;br&gt;UPS&lt;br&gt;Solar back up&lt;br&gt;Laptop for key trainers with capacity for video conferencing&lt;br&gt;Conferencing system, with cameras, speakers, cordless microphones and projector</td>
</tr>
<tr>
<td>CRC (6000 approx)</td>
<td>CRC coordinator will have a role to support trainees through mentoring and supporting local meetings</td>
<td>If possible provide Internet access with one computing access point</td>
</tr>
<tr>
<td>School</td>
<td>No kit currently, but this should be an issue for the future. However, we should ensure solar electricity provision. There are other schemes which should be leveraged</td>
<td>If possible and assuming teachers have an equipment, a small portable battery/mains projector (approx. £100/£150/R8000) could be provided for each school</td>
</tr>
<tr>
<td>Teachers</td>
<td>It is important for teachers to have access to resources, but without connectivity provision, though it would be helpful if the device was connectable when in range.</td>
<td>Approx costs for providing kit for 190,000 teachers: &lt;br&gt;Phone/sim/speaker @ £40 = £7.5m or R600m&lt;br&gt;Tablet @ £60 = £11.4m or R900m&lt;br&gt;OLPC @ £150 = £28.8m or R2,300m&lt;br&gt;Laptop @ £300 = £57m or R4,500m</td>
</tr>
</tbody>
</table>

- **Basic mobile** – This is not recommended as they do not provide effective access to other materials and bandwidth for communications is not good in rural areas.
- **Tablet** - The strengths for the tablet are the access to a wide range of formats e.g. audio, video, print, pdf, etc. and other resources, plus with wi-fi it can connect to internet at centres. However, in terms of a teacher being able to create materials or ideas, the tablet is much more difficult, poor interface and difficult to control.
It should be noted that the table above only provides a functional specification and the next task will be to produce a full technical specification. Any fine detail above will need to be specified properly, see action lists below.

Key obstacles and suggested solutions

- The majority of the procurement should not experience any major obstacles, apart from timescale and assuming there are agreed procurement procedures to follow. A strong procurement should bring any of the equipment options in at a lower total price, especially where there is some competition in the market space.

- Internet bandwidth is challenging and, whilst the programme should aim for the best that can be afforded or delivered, it would be important to have appropriate linked caching systems so what bandwidth is provided is supported.

- Power is a major issue and is mentioned above a number of times. Some solutions are suggested, including UPSs at key sites, exploiting solar provision, and ensuring that any procurement of technology solutions for teachers and field staff are as battery efficient as possible. It would also be very important to consider power provision for rural locations not in isolation, but to consider carefully other initiatives and potential links for joint funding for provision.

- Cost of equipment and infrastructure will be a challenge, and so it is also recommended that existing and planned technology facilities are taken into account in the planning. Although very sensible, there might be obstacles relating to current owners and funders, senior state support maybe needed to drive opportunities and efficiencies through.

- ICT provision is often undone by a lack of funding for and delivery of technical support. Technical support will be challenging as a result of the conditions and distributed nature of the programme. It is suggested that careful consideration is given to Technical Support and that systems are included so that remote management of equipment and software can be achieved. Also, robustness of equipment should be considered carefully against cost to reduce demand on technical support.

Key stakeholders

It is suggested that, for a project of this size, a stakeholder group is vital and it would be important to establish the group as soon as possible. The group should be carefully selected to represent the different groups, and given the range of expertise/experience of some groups, there may need to be some orientation prior to business meetings starting.
As stated by other groups, it is important to include teachers and potential trainers in the functional specification, piloting, and testing stages. Too many ICT procurements fail as a result of technical solutions being chosen in isolation by people who are not representative of the user audience. Stakeholders should include people from the State, other key agencies, SCERT, DIETs/PTECs, BRCs, CRCs, head teachers and teachers, the World Bank and any other funders.

The group identified the potential of leveraging other initiatives from different Ministries and the possibility of considering wider community use where broadband is provided some of the centres. Whilst negotiation for this activity could be achieved through separate bi-lateral discussions, it might be valuable to have a small cross ministry group to review these issues led by an appropriate senior representative from the host ministry.

**Definition of success**

Identifying indicators for success for the technology provision is relatively straightforward. Success would be achieved if the:

- Functional and technical specifications are produced on time and to quality.
- Process draws real competition for excellent pricing against the market for equipment.
- Delivery and installation phase is completed to budget, time, and brief.
- Uptime of equipment and networking is above an agreed level (to be determined in specification phase).
- Feedback on the equipment from users is positive.

**Potential sources of funding**

Funding was not discussed as the group ran out of time.

**Implementable Actions**

- The recommendations from this group need to contribute to the project design phase.
- In parallel with 1, the outline model above needs to be tested in theory with a wider audience.
- Assuming the model is agreed, some market research is required, and as suggested above, a pilot of the potential technologies should be carried out. This pilot should also be used to establish a baseline for training across the scope.
- A costing exercise should be initiated to establish what can be afforded within the funds available, and if there is any need/potential for applying for or accessing further funds.
- In parallel:
  - A detailed functional specification should be developed, tested and then, after any revision, converted into a detailed technical specification.
  - Based on the estimated costing, and considering viability, potential procurement approaches and specification work, a brief and plan should be established and agreed for procurement, delivery, roll-out and installation, training and implementation.
Based on experience of other large schemes, there should be some phasing of the roll-out phase to ensure the most successful outcome.

Although equipment for student use is not within the scope of this brief, the groups wanted to suggest that, if the funding allowed (or further funding became available), provision of student technology (such as OLPC) should be considered as this would provide a greater return on the investment in the training of teachers.

**Group 4: Delivery of Materials and learner support system**

**Moderator:** Claire Hedges

Action areas for material delivery are: involving teachers in designing the curriculum, piloting different types of distribution mechanisms, recruiting teaching champions with good interpersonal skills, and sharing materials regularly and exchanging reflection with teachers.

In terms of learner support systems, leveraging existing resources available within school and outside the classroom and bringing a support system close to teachers in the classroom is the key. Inside the school, head teachers, cluster resource leaders, and block leaders can be a part of the support system. As an outside classroom support, using ICT to foster collaborative learning could be one of the support systems.

**Group 5: Monitoring and Evaluation Group Report**

**Moderators:** Steven Hutchinson, Neil Butcher

The concepts of monitoring and evaluation are distinct, but closely related and the line between them is blurred. It is thus important to define carefully how each concept has been used in the context of this plan.

- **Monitoring** is regarded as a type of formative evaluation and continuous observation of implementation progress. Typically, monitoring makes use of routine management information to establish the extent to which targets, outcomes and/or goals are being achieved, and to identify changes occurring. Monitoring usually focuses on the ongoing tracking of inputs, processes and outputs of a strategy or intervention over time. Continuous monitoring and data inflow is also a source for decision-making, programme planning, and course correction.

- **Evaluation** involves the interpretation of monitoring data to discern, explain and assess changes, trends, patterns and causalities. Evaluation research seeks to understand the impact that a strategy or intervention is having and is focused on the implications of what monitoring data shows. In sum, evaluation research takes a deeper and more complex look at monitoring data, and often includes the collection of additional research data to inform evaluative conclusions about impact. Often, evaluation research will raise further questions that need to be considered in later evaluation studies.
Key Principles in Designing the M&E Framework

- Design of the M&E Framework should be tightly integrated with overall project design, to ensure that indicators of success defined for the overall project drive the design of the M&E and to enable the ongoing development of the M&E Framework to inform the final project design.

- M&E activities should be an integral component of project delivery from the outset of the project. Rather than seeing M&E as an outside and largely inspectorial function, it should be tightly integrated with the project management processes so that it can serve to inform and improve project delivery on an ongoing basis.

- The number of indicators of success to be measured through both monitoring and evaluation should be kept very few and as simple as possible. Once defined, these few indicators should inform design of all aspects of the M&E Framework, such as design of a Management Information System (MIS) for the project and implementation of a baseline audit.

- An MIS system designed for the project should be an integral component of the project management systems, rather than being maintained simply for M&E purposes, in order to ensure that it is used and kept up to date on a daily basis.

- Development of both the project and the M&E Framework should incorporate inputs from a wide range of players, including: teachers, teacher unions, students, school principals, government representatives, parents, and school students. In addition, the actual M&E activities should make provision for a wide range of ongoing, self-evaluation activities by project participants so that they are actively involved in the evaluation rather than just being passive subjects of evaluation.

- The monitoring function will be done internally (i.e. by those involved in day-to-day project implementation and management) and evaluation will be conducted by a researcher or research team who are not part of the implementation process.

- A dedicated percentage (proposed to be 5%) of the overall project budget should be ring-fenced for project evaluation in order to ensure that the M&E Framework is properly resourced. This is considered important not for the sake of M&E, but rather to ensure that M&E activities can contribute directly to increased efficiencies and improved performance in the project on an ongoing basis.

Defining Indicators

Defining indicators of success is ultimately a function of overall project design, rather than of design of the M&E Framework. Thus, indicators will be drawn from the overall project design when this is complete. As part of this, it will be essential to establish what aspects of the project design are fixed outside of the control of the project (e.g. broader national targets for teacher professional development, curriculum frameworks, etc) and which are variable as this will have an important effect on what indicators can be identified as criteria for successful completion of the project.

It is, however, anticipated that the M&E Framework will include measurement of the following key aspects of the project, with activities considering a range of inputs, processes, and outputs:

- Project targets:
  - Infrastructural reach of the project.
  - Flow of finances in the project.
Deployment of human capacity to implement project, combined with improvements in capacity (particularly amongst teacher education providers).

Effect of the programme:
- Number of teachers trained.
- Evidence of knowledge transfer.
- Identified changes in classroom practice occurring as a result of project implementation.
- Growth in community confidence in schooling.

Development of people:
- Measurable improvements in teacher and teacher educator competence.
- Extent to which project has met needs and aspirations of participating teachers.

Ultimately, it is expected that collection and analysis of data across indicators of success drawn from the above list will cohere into a form that enables deep and meaningful assessment of the extent to which the project has created:

- Cost benefit
- Efficiency gains (as well as any potential unintended negative consequences leading to increases in inefficiencies)
- Continuity, enabling continuation of activities to a next level or into a next phase of activity after the project is complete.

**M&E Activities**

Detailed activities for the M&E Framework cannot be designed without first defining the proposed indicators of success. Nevertheless, the following broad structure of activities is proposed:

- Baseline audit. It is proposed that the evaluation should commence with an initial baseline audit. Ideally, this activity could commence in parallel and also contribute to the project design, as should be possible to initiate this almost immediately. The baseline can then be used as a core data set against which future progress can be measured. The baseline should seek to capture:
  - Needs and aspirations of targeted teachers; and immediate school community (parents, guardians, and children).
  - Capacity development needs of possible teacher education providers.
  - Material realities in contexts in which programme delivery will take place, including regulatory and physical capacity constraints, willingness and motivation of the implementing cadres, etc.
  - Baseline Overview of classroom practices.

- Design and implementation of online MIS System, which uses data from baseline audit as its starting data set and then is used throughout the project as a core project management tool, from which data for M&E activities can be drawn.

- Establish and, as necessary, develop a team of M&E professionals, to be a mix of in-house and external experts. Though M&E is envisaged as an integral role of implementation, the M&E cadre would largely be a conscience keeper and problem-solver in matters of interpretation, data conflict, or overall analysis.
Completion of a Recognition of Prior Learning (RPL) activity for all teachers, in order to measure levels of competence up front and identify possibilities for credit exemptions (with RPL exercises forming a core part of the baseline data set).

Completion of a series of quarterly, rapid-fire project evaluation exercises for the first 12–18 months, in order to enable the M&E team to contribute to resolving key implementation challenges and thereby ensuring that the later evaluation activities are not falsely influenced by implementation problems.

Integration of ongoing monitoring activities into project management structures, systems, and processes, so that they are not conceptualized as running parallel to the overall project implementation.

Completion of a series of triangulated evaluation activities on an ongoing basis (precise methodology to be determined by project timing and indicators of success), including:

- Surveys/questionnaires
- Interviews
- Focus groups
- Observations
- Possible early use of ‘control’ groups in schools – comprising teachers not yet enrolled in programme – in order to compare classroom practices run by teachers being trained and not being trained.
- Self-assessment tools (including possible use of mobile apps);
- Analysis of teacher assessment outputs.
- Expert reviews of key outputs (e.g. curriculum content, deployment of LMS, technology architecture, etc.).

Production of an annual formative evaluation report to inform project implementation.

Completion of a final summative evaluation report, to share lessons learned with the outside world.

Possible publication of academic journal articles to enable integration of project knowledge into global knowledge pools.

**Group Participants**

**Group 1**

1. Dr. Geeta Nagraj
2. Dr. Phalachandra (Moderator)
3. Dr. Chaudhry
4. Dr. Rajendran
5. Dr. Moin
6. Dr. A.K. Sharma
7. Dr. Rajaram Sharma
8. Dr. Praneti Panda

9. Mr. Joshi
10. Dr. Nutan Bharati
11. Mr. Manoj Jha
12. Mr. Arshad Raza
13. Jitendra Kumar

**Group 2**

1. Dr. Renu (Save the Children)
2. Suea Sandilya (UNICEF)
3. Dr. Veer Kujar (SCERT, Bihar)
4. Ramvienay Paswan (SCERT, Bihar)
5. Govind Prasad (Elementary teacher - Bihar)
6. Abha Rani (BEPC)
7. Dr. Archawa (SCERT)
8. Dr. Riter Roy (SCERT)
9. Dr. Gyowdeo Mani Tripathi (Principal, MCEM)
10. Dr. Sweta Sandiger (Senior consultant, UNICEF)
11. Emteyaz Alam (SCERT)
12. Dr. Radha Raman Prasad (SCERT)
13. Vibher Rawi (SCERT, Bihar)
14. Manju Sinha (SCERT, Bihar)
15. Anna Rama (EU)
16. Prof. Sudhakar Agarker (Homi Bhabha Center, Mumbai)

Group 3
1. Tom Power
2. Pradeep
3. Fredrick Roy Kharkongor
4. Gautam Barman
5. David Hassell
6. Maya Menon
7. Ajay Krishnan
8. Lalita Pradeep
9. Sridhar Rajagopalan
10. Tej Narain

Group 4
1. Claire Hedges (Open university)
2. Spokey Wheeler (Adyhyan)
3. Ali Imam (Gov. of Bihar)
4. Suman Bhatier (Delhi University)
5. Mohan Menon (Wawasan open University)
6. A.K. Pardeya (Gov. of Bihar)
7. Rakesh Kumar (Gov. of Bihar)
8. Ginteyaz Alan (SCERT)

Group 5
1. Steven Hutchinson (Open University)
2. Neil Butcher (NBA)
3. Vyajayamthi Iyer (EI)
4. Rama Mathew (DU)
5. Pranati Panda (NUEPA)
6. Antony (Save the Choldren)
7. Sanjay Thakur (DIET, Patna)
8. Saurabh Dwivedy (GNFC)
9. Michael Connely (British Conucil)
10. Rakesh Kumar (CTE, Bhopal )
11. Saurabh Johri (World Bank)
12. Colin Bangay (DfID): Briefly
13. Sangeeta Day (DfID): Briefly
## ANNEX 2: AGENDA

<table>
<thead>
<tr>
<th>Time</th>
<th>Program Details</th>
<th>Remarks</th>
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<tr>
<td><strong>Day 1: Wednesday, 13 June, 2012</strong></td>
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<tr>
<td>09:30–10:00</td>
<td>Registration of Delegates</td>
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<td>10:00–10:45</td>
<td>High Tea/Coffee</td>
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<td>11:00–12:00</td>
<td><strong>Session I: Inaugural Session</strong></td>
<td>Presentations</td>
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<td><em>Welcome and Objectives of the Conference</em></td>
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<td>Dr. Shabnam Sinha, Senior Education and Institutional Development Specialist, The World Bank</td>
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<td><em>Teacher Education: An Emerging Area of Engagement of Development Partners</em></td>
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<td>Dr. Hans Van Vliet, First Counsellor, Development Cooperation, Delegation of the European Union to India</td>
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<td><em>Innovative Approaches for Teacher Education and the World Bank Engagement in Bihar</em></td>
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<td>Mr. Michael Haney, Operations Advisor, The World Bank, India</td>
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<td><em>Challenges of Teacher Education in Bihar – the Light of RTE:</em></td>
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<td>Dr. Amarjeet Sinha, Principal Secretary, Department of Human Resource Development, Government of Bihar</td>
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<td><strong>Key Note Address</strong></td>
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<td><strong>Inaugural Address</strong></td>
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<td>Shri. Nitish Kumar, Honourable Chief Minister of Bihar</td>
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<td><strong>Vote of Thanks</strong></td>
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<td>Mrs Caralyn Deshmukh, Teacher Education, Ministry of Human Resource Development</td>
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<td>12:00–01:00</td>
<td><strong>Session II: The Indian Scenario of Teacher Education</strong></td>
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<td><em>Chair: Prof. A. K. Sharma, Former Director, National Council of Educational Research and Training</em></td>
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<td><em>Teacher Education and NCERT: The Journey so Far and Way Forward</em></td>
<td>Presentations + Q&amp;A</td>
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<td>Prof. Rajaram S. Sharma, Joint Director, CIET, NCERT</td>
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<td>01:00–01:30</td>
<td><strong>Use of ODL and ICT in Teacher Training with special emphasis on English Language Teaching</strong>&lt;br&gt;Prof. Rama Matthew, Head, Central Institute of Education, Delhi University&lt;br&gt;&lt;br&gt;<strong>Use of ODL in Teacher Education: The IGNOU Experience</strong>&lt;br&gt;Prof. S.V.S. Chaudhury, Indira Gandhi National Open University and Director, Distance Education Program, Sarva Shiksha Abhiyan</td>
<td>Presentations</td>
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<td>1:30–02:30</td>
<td><strong>Curriculum Framework for Teacher Education through Distance Mode in Bihar</strong>&lt;br&gt;Prof. B. Phalachandra, Wawasan Open University, Penang Malaysia&lt;br&gt;Prof. Mohan Menon, Assistant Vice Chancellor, Wawasan Open University, Malaysia</td>
<td>Lunch</td>
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<td>02:30–04:00</td>
<td><strong>Session III: International Best Practices</strong>&lt;br&gt;Chair: Prof. Geeta Gandhi Kingdon, Institute of Education, University of London&lt;br&gt;&lt;br&gt;<strong>Thought Provokers:</strong>&lt;br&gt;<strong>ICT in Financial Sectors: Potential for Teacher Education</strong>&lt;br&gt;Mr. Navneet Vasishth, Boston Consulting Group&lt;br&gt;&lt;br&gt;<strong>English in Action in Bangladesh</strong>&lt;br&gt;Mr. Tom Power, Senior Lecturer in Teacher Education and Development, UKOU&lt;br&gt;&lt;br&gt;<strong>Open Educational Resources for Teacher Education in Commonwealth Countries</strong>&lt;br&gt;Prof. Mohan Menon, Assistant Vice Chancellor, Wawasan Open University, Malaysia&lt;br&gt;&lt;br&gt;<strong>ICT Competency Framework for Teacher Education- The Indonesia Experience</strong>&lt;br&gt;Mr. Neil Butcher, Director, Neil Butcher &amp; Associates</td>
<td>Talk show format</td>
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<td>04:00–05:30</td>
<td><strong>Session IV: Introduction to Group Work</strong>&lt;br&gt;During the three days, the conference will divide itself into four self-selecting concurrent sessions. The participants can choose their groups based on their experiences and interest. The sub-groups will have a designated expert—who will make an initial presentation, moderate the discussion and report back the key points to the larger group. Presenters for other sessions will join and ask questions from time to time to dig a discussion further.&lt;br&gt;&lt;br&gt;<strong>Curriculum Frame work and its transaction</strong>&lt;br&gt;(Moderator: Prof. B. Phalachandra, Wawasan Open University, Penang Malaysia)&lt;br&gt;&lt;br&gt;<strong>Development of Learning Materials</strong>&lt;br&gt;(Moderator: Mr. Subir Shukla, Independent Consultant)&lt;br&gt;&lt;br&gt;DE Strategy and Hardware Architecture (Moderator: Mr. Tom Power, Senior Lecturer in Teacher Education and Development, UKOU)</td>
<td>Presentation + Breaking up to a Group</td>
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| Delivery of Materials and learner support system  
(Moderator: Prof. Claire Hedges, The Open University, UK)  
Monitoring and Evaluation  
(Moderator: Prof. Steven Hutchinson, Department of Education, UK Open University Neil Butcher, NBA)  
Tea/ Coffee will be served during the sessions. |                                                                        |                          |
| Day 2: Thursday, 14 June, 2012 | **Session I: Indian Experience in ODL**  
Chair: Mr. Neil Butcher, Director, Neil Butcher & Associates  
*Institutional Collaboration: Implications for Teacher Education*  
Dr. S.S. Jena, Chairman, National institute of Open Schooling  
*Use of ICT for Teacher Development: The Karnataka Experience*  
Ms. Maya Menon, Teacher Foundation, Bangalore  
*Use of Distance Education and Teleconferencing: Possibility for Teacher Education*  
Prof. B. Phalachandra, Wawasan Open University, Penang Malaysia  
*CISCO in Education: The ICT Experience*  
Mr. Ajay Krishnan, Director Business Development, CISCO | Presentation             |
| 10:00–11:30 | **Session II: Challenges of Teacher Education: The State Perspective**  
Chair: Shri. Sunil Kumar, IAS, Secretary, Government of Uttar Pradesh  
*Meghalaya State Presentation*  
Mr Frederick Roy Kharkongor, Meghalaya  
*Gujarat State Presentation*  
Dr Joshi, Gujarat  
*Assam State Presentation*  
Mr Gautam Burman, Assam  
*Planning and Preparedness: The Bihar Strategy*  
Dr A.K. Pandaya, Bihar | Presentation             |
| 11:30–11:45 | Tea/Coffee                                                                                                                                                                                                       |                          |
| 11:45–01:00 | **Session III: Group Work and Presentation**  
*Presentation: International and Country Experiences*  
Chair: Dr. Shabnam Sinha, Senior Education and Institutional Development Specialist, The World Bank  
*ODL and Teacher Education at the Global level*  
Dr. Nutan Bharti, Program Officer, Commonwealth of Learning, India  
*ICT in School Education: Implications for Teachers at the Secondary Level*  
Ms. Caralyn Deshmukh, Teacher Education, Ministry of Human Resource and Development  
*The Private Sector in ICT: View from the Other Side*  
Mr. Saumya Kanti, Director, Educomp | Group Work + Presentations in between |
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<td>04:00–04:15</td>
<td><strong>Tea/Coffee</strong></td>
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<td>04:15–05:30</td>
<td><strong>Session IV: Group Work and Presentation</strong></td>
<td>Group Work + Presentations in between</td>
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<td>Presentation: <em>International and Country Experiences</em></td>
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<td>Chair: Prof. Steven Hutchinson, Head of Department, Department of Education,</td>
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<td>The Open University, UK</td>
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<td><strong>Developing leadership of ICT in Schools</strong></td>
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<td>Mr. David Hassel, National College for School Leadership</td>
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<td><strong>Open Distance Learning (ODL) material for open schooling</strong></td>
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<td>Mr. Dinesh Singh Bist, CEO, Bihar Board of Open Schooling and Examination</td>
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<td><strong>Training Needs Assessment in Large Scale Training Programs</strong></td>
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<td>Ms. Vyjayanthi Sankar, Vice President-Large Scale Assessments, Education</td>
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<td><strong>Mobile Telephony and Innovative Solutions to Teacher – the ‘English in Action’</strong></td>
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<td></td>
<td>Mr. Tom Power, Senior Lecturer in Teacher Education and Development, UKOU</td>
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**Day 3: Friday, 15 June, 2012**

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<tr>
<td>10:00–10:20</td>
<td><strong>Thought Provoker:</strong></td>
<td>Presentations</td>
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<td></td>
<td><em>One Laptop Per Child - Application for Teacher Education</em></td>
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<td>Dr. Satish Jha – One laptop Per Child, India</td>
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<td><strong>Teacher Management</strong></td>
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<td>Dr. Renu Singh, Save the Children</td>
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<tr>
<td>10:20–11:30</td>
<td><strong>Session I: Further Discussions and Consolidation of Key Points</strong></td>
<td>Group Work</td>
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<td>11:30–11:45</td>
<td><strong>Tea/Coffee</strong></td>
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<td>11:45–01:00</td>
<td><strong>Session II: Sharing of Groups’ Discussions and Key Points</strong></td>
<td>Presentations + Q&amp;A</td>
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<td>After each group’s presentation, there will be a series of clarification</td>
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<td>questions from the presenters</td>
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<td>01:00–02:00</td>
<td><strong>Lunch</strong></td>
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<td>02:00–03:30</td>
<td><strong>Session III: Sharing of Groups’ Discussions and Key Points</strong></td>
<td>Presentations + Q&amp;A</td>
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<td><strong>Dissemination and Mentoring</strong></td>
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<td>Subjects: English, Mathematics, Sciences, Social Sciences, Hindi and Sanskrit</td>
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<td>03:30–05:00</td>
<td><strong>Session IV: Valedictory Session</strong></td>
<td>Presentations</td>
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<td>Chair: Shri. P. K. Shahi, Honourable Minister of Human Resource</td>
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<td>Development, Government of Bihar</td>
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<td></td>
<td><strong>Summary and Key Takeaways for Teacher Education using ICT and ODL</strong></td>
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<td>Dr. Shabnam Sinha, Senior Education and Institutional Development Specialist,</td>
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<td>The World Bank</td>
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<td>Time</td>
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<td>Addressing the Issue of Numbers: Next Steps for Bihar</td>
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<td>Dr. Amarjeet Sinha, Principal Secretary, Department of Human Resource Development, Government of Bihar</td>
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<td>Valedictory Address</td>
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<td>Shri P. K. Shahi, Honourable Minister for Human Resource Development, Government of Bihar</td>
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<td>Vote of Thanks</td>
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<td>Ms. Shagun Mehrotra, Education Advisor, European Union</td>
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