



ICT Strategic Vision and Plan

*3rd Primary Education Development Program
Directorate of Primary Education
Ministry of Primary and Mass Education
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Foreword

The Directorate of Primary Education (DPE) is mainly responsible for providing basic education to around 19 million school age children of the country and thereby builds a strong foundation for them to ensure a better future. These children will take over the responsibility of taking forward the dreams of the nation to acquire the status of a middle income country in 10 years and that of a country of the first world in 30 years. In recent times, information and communication technology (ICT) has become the main driving force for change. No better progress can be achieved without adaptation of technology. At the same time, technology has proved itself useful in course of providing prompt services to the people in a timely, efficient and transparent manner. In this backdrop, this ICT Strategic Vision and Plan is prepared by DPE with an intention to provide better services to its clientele population.

I find pleasure in quoting a wise saying by George Bernard Shaw, “The reasonable man adapts himself to the world; the unreasonable man persists in trying to adapt the world to himself. Therefore, all progress depends on the unreasonable man.” In Bangladesh, the governments previously followed the view of the reasonable man over the years and considered IT as the way forward to achieve the targeted goals through automation. But the ‘Digital Bangladesh’ concept has altogether changed the notion and took over a role that is similar to that of an unreasonable man. Now the main focus is on better service delivery to the people with the slogan ‘service@doorsteps’. Of course Digital Bangladesh has a secondary focus on automation only when needed to support delivery of services. DPE is determined to improve delivery of its services to the people of the country making good use of ICT.

This Strategy is intended to take stock of the DPE's current ICT capacity, review its performance in key areas and make recommendations on how to take it forward more effectively through improved use of Information and Communication Technology. It spells out the detailed vision, success indicators, strategic actions and related projects for each priority area, as well as the implementation road map and timeline.

I acknowledge with gratitude the contributions of all those who were associated with the process of preparation and finalization of this document. Especially, I keep on record the support and assistance provided by the representatives of the development partners, the consultants of the RBM team and other consultants working in DPE

Let us hope that this visionary document of DPE will help improve and bring better results in the operational performance of DPE and eventually the children of the country will have the privilege to get better prepared to face the challenges of the future.

Shyamal Kanti Ghosh
Director General.

ICT Strategic Vision and Plan

"Wisdom is to recognise what can be made better and make it better, and to recognise what can only be made worse and walk away."

- Glen Duncan, British Author.

1.0 Introduction

1.0.1 In recent times, Bangladesh has witnessed dramatic changes in the public service delivery mechanism and the organizational thinking behind it. Technology is helping the government to accelerate its services and development activities more transparently than ever. This is an exemplary case of a developing nation coming to grips with technology and turning it into a life-changing tool for millions of citizens. Being an integral part of the governmental machinery, the Directorate of Primary Education (DPE) has also undertaken several milestone activities dedicated towards achievement of the targets of the government in the primary education sector.

1.0.2 ICT has profoundly changed almost all aspects of the society in Bangladesh. It is now central to how people communicate, interact, make decisions and do work. It plays a key role in social and economic transformation. It makes possible the transformation of governmental services, its operational performance and enables open engagement with communities frequently. Possibilities created by current and emerging technologies have influenced and raised peoples' expectations for dealing with government.

1.0.3 The Government of Bangladesh considers information and communication technology (ICT) as an enabling factor towards achievement of its goal of developing the country in a rapid pace and has clearly stated its intention to expand and diversify the use of such technologies in all spheres of life as the key driver of socio-economic development. This policy guideline is expressed in the "Vision 2021" plan that is directed to build "Digital Bangladesh" through creation of a knowledge-based society and facilitating transformation into a middle-income country by the year 2021.

1.0.4 This ICT Strategic vision of DPE sets the direction for use of ICT in the field of management and operation of primary level educational system in the country.

1.1 Vision

1.1.1 "Enhancement of DPE's capability through use of ICT with a view to enabling delivery of more integrated, responsive and targeted information and services, improving functional efficiency and supporting the national goal of becoming a middle-income country within 2021 by making a strong base for nation building."

1.2 Purposes

1.2.1 To put it very simply, this ICT Strategic Vision and Plan has only two main and specific purposes – "Doing things better" and "Doing better things".

1.3 Objectives

1.3.1 In the light of the above, the broad objectives of this strategic vision and plan are briefly mentioned below:

1. **Better delivery of services:** Making efforts to provide simplified and effective services up to the level of expectations of the people taking advantage of technology-enabled opportunities.
2. **Better and improved capability:** Build up human resources, and develop and maintain reliable ICT infrastructure for improving ICT knowledge, skills and capacity across DPE to deliver more prompt and efficient services.
3. **Better access to information:** Creating opportunities for officials (from central to the field level), teachers, students and general people so that they can easily access public information produced and maintained by DPE to enable more active involvement of all stakeholders to build knowledge, spark ideas and facilitate better informed decisions.
4. **Better internal and external communications:** Communicating with the teachers, students, officials and members of the public through frequent use of technology-based communication tools.
5. **Better staff development:** Providing teachers and staff appropriate trainings on computer and internet literacy, both basic and advanced, including sensitization programs, and also using ICTs in the conducting of training courses on other topics.
6. **Better transparency, openness and accountability:** Functioning in a more transparent way as well as strengthening networks, creating partnerships and using a variety of technologies to involve the wider community in developing policy and informing service delivery.
7. **Better administrative and management practices:** Improving the administrative processes with greater use of information technology and thereby speedily delivering the administrative decisions to the officers, teachers and staff, and, at the same time, quickly responding to any queries or complaints from the people.
8. **Better supervision, monitoring and evaluation:** Introducing IT-based online data collection and processing system for effective supervision of performances at the school-level, including monitoring and evaluation of developmental and other programs.
9. **Better sustainability of ICT operations:** Achieving greater energy efficiency, useful carbon emission management and sustainable environmental performance in DPE's ICT operations, and also to implement an ICT energy management plan that will facilitate improvements in technology, infrastructure and practice.
10. **Better maintenance, security and privacy:** More innovative and strategic use of ICT to ensure internet security and privacy for all the users including the teachers and students, in addition to proper arrangements for regular maintenance of the equipment.

1.4 Need for an ICT Strategic Vision

1.4.1 Of late, ICT has been playing a crucial role in the transformation of governmental machineries to meet peoples' expectations for better services, and to create a more open Government. The administrative restructuring programs and service delivery with support of ICT have achieved greater integration, responsiveness and transparency.

1.4.2 The internet along with the rapid changes in the technology landscape has changed the way of how people can get access to government services. Such changes have become a continuous and regular phenomenon and have been dramatic and occurred over a very short period of time. This pace of change is expected to continue if not accelerate. Smaller devices, increasingly mobile technologies, technology based on personal preferences, etc. will be influencing delivery of government services. These changes also can profoundly influence the choices for ICT investment and the ways and means of service delivery. The greatest challenge now is to address the need to balance the potential gains from innovation in ICT with the need to provide stable and reliable operations and services.

1.4.3 People expect good quality, easy to use and frequently available services from the government and measure the performance of the government against that of the private sector. The use of ICT-related opportunities is integral to developing the processes of policy making and service delivery. ICT offers new ways to design, develop and deliver services, automate existing services, and more effectively consult and engage with a broader range of stakeholders. DPE intends to make use of the available new technologies to deliver better services and to improve its operational performance and also to make it easier for people to access its services. At the same time, careful consideration will be given to the risks of new technologies in terms of security, privacy and sustainability.

1.4.4 Continuing rapid changes to the technology landscape and greater opportunities to improve government operations and service delivery as mentioned above highlight the need for a new strategic vision for use of ICT by the DPE. Thus this ICT Strategic Vision provides the direction for ICT investment, capability development, and transformation to support and enhance service delivery and operational performance during the next few years.

1.5 Nature and Scope

1.5.1 Productivity is about achieving outcomes in new or better ways. It is also about simplifying or ceasing processes that are inefficient. Reducing the time people and communities take to interact with government, frees up time for all to contribute to other more productive activities. This vision outlines a future where people's interaction with the DPE will occur seamlessly as part of day-to-day life, where people and communities are connected and engaged to provide input to policy formulation and service delivery, and where efficient operations deliver faster and more targeted services.

1.5.2 This ICT strategic vision outlines how the DPE will use ICT to transform its operations and services to achieve the policy objectives of the government in the field of primary education. More visibility of ICT design and investment intentions is desirable. Simultaneously, decisions to acquire or upgrade ICT systems should consider the broader implications for government and the people.

1.5.3 This vision supports the Government's broader policy objectives and major programs of work, and will sincerely follow the guidelines provided by the government from time to time.

2.0 Platform for transformation

2.0.1 The government has laid the foundation for an enabling environment towards ICT-supported functioning at various levels with an actionable National ICT Policy 2009, Right to Information Act 2009, ICT Act 2006, National Science and Technology Policy 2011, etc.

2.1 ICT Policy 2009

2.1.1 The ICT Policy adopted by the government in 2009 intends to expand and diversify the use of ICTs to establish a transparent, responsive and accountable government, develop skilled human resources, enhance social equity, ensure cost-effective delivery of citizen-services, support the national goal of becoming a middle-income country within 2021 and join the ranks of the developed countries of the world within thirty years. Optimal resource utilization, certified skills development, efficient communication and quality education are some of the ways in which the above goals will be realized within the specified timeframe by pushing the growth rate to above 7.5% through extensive use of ICTs, the Policy targets. By sustaining this level of growth, the country's GNP can be increased twenty-fold from the present level and high-income status can be achieved within 30 years.

2.2 National Science and Technology Policy 2011

2.2.1 The objectives of the National Science and Technology Policy 2011 include, inter alia, integration of ICT at the institutional level for development in the fields of education and training, and to develop a creative environment in all the educational institutions. The Policy entrusts the following responsibility on DPE:

- Develop digital contents in local languages for conducting teaching-learning process in the classrooms.
- Ensure ICT literacy for the teachers and students.
- Supply computers and multimedia equipment to all schools with solar panels, wherever necessary.
- Ensure internet connectivity for all schools and training institutions.
- Establishment of an appropriate ICT unit manned with ICT professionals.
- Use of multimedia resources in classroom teaching-learning as well as for teacher training in Primary Training Institutes (PTIs), Upazila/Thana Resource Centres (URC/TRCs) and the National Academy for Primary Education (NAPE).
- Set up a national repository of e-learning contents for use by the teachers and students.
- Introduce proper system to communicate with people and to make all information available to the people through electronic media.
- Increase use of radio and television for transmission of educational programs.
- Start Early Childhood Development and Pre-school (ECDP) activities for children belonging to poor and minority communities, remote areas and tribal population.
- Increase use of electronic media for communicating, file processing, and exchange of information.

2.3 ICT Act 2006

2.3.1 The Information and Communication Technology Act, 2006 (Act No. XXXIX of 2006) has created a platform and paved the way for lawful use of ICT in the governmental functions. It contains provisions regarding legal recognition of electronic signature and electronic records including their certification, maintenance, security, etc. In addition, it provides for appropriate punishment for offences relating to computer or computer system.

2.4 Master Plan for ICT in Education 2012-21

2.4.1 With a view to minimize the digital divide and to ensure access for all to the emerging technology, the Government has published in July 2013, a Master Plan for adoption and use of ICT in Education. It is expected that introduction of ICT in schools will enhance children's enrollment and facilitate prevention of drop-outs to a significant extent. It is also expected to bring dynamism in educational administration.

2.5 Vision 2021

2.5.1 The year 2021 will mark the golden jubilee of Bangladesh's independence. To mark this auspicious occasion, the government is committed to building a country whose citizens are able to live prosperous and happy lives. Thus 'Vision 2021' targets establishment of a resourceful and modern country through effective use of ICT. It is a visionary plan of the government which depicts a scenario of Bangladesh as the people of the country would be proud to see in 2021. It envisions a Bangladesh which will be a middle income country by that time, and where poverty will be drastically reduced. The prime focus of this vision in the education sector is creation of a generation educated in science and technology with the highest emphasis on the ICT.

2.6 Digital Bangladesh

2.6.1 Digital Bangladesh has been conceived out of thinking that a real technology respectful towards human needs and to the environmental concerns will surely bring prosperity and happiness to the teeming millions. It is a blend of ICT and modern technology driven by a political will of ensuring social goodness for the people of the country. It is a new vision of the Government initiated in 2009 aiming at building a better future for the nation. It is as well a modern philosophy of using appropriate technology as a pro-poor tool to ensure, among others, social equity through quality education. It introduces a big shift in the policy outlook of the government from – ICT for office automation to ICT for better delivery of essential services to the doorsteps of the people.

2.6.2 The government has articulated the Digital Bangladesh vision in certain terms, started the process of leadership development to realize this vision and launched a number of programs which have clearly demonstrated the benefits of utilizing ICTs for service delivery.

2.7 National E-Service System (NESS)

2.7.1 However, the most important initiative of the Government towards achieving the vision of Digital Bangladesh is introduction of the National E-Service System widely known as NESS. Providing necessary services to the citizens and disclosure of all information as part of the open government initiative has started through e-service centers established in the Deputy Commissioner's offices all over the country. In addition, Union Information and Service Centers (UISC) are established to deliver services through ICT to the people belonging to the grassroots level in the country. So far, a total of 4516 UISCs and e-service centers in 64 districts are established.

2.7.2 Jessore is now functioning as the first digital district in the country. Every government office at the district and upazila level is maintaining files, communicating and providing services to the people electronically.

2.8 Open Government Initiative

2.8.1 Open Government Initiative is a concept designed to promote efficient, transparent and sustainable public services through ICT. One of the aims of the initiative is to improve governance through e-services and improved systems in the health, education and agriculture sectors. Improvement of the performance of primary schools, the learning outcomes and graduation rates of students are included. Automation of school performance monitoring system, automation of teacher salary payments, improved targeting and delivery of stipends for primary school children are also the target areas.

2.9 Sixth Five-Year Plan

2.9.1 The Sixth Five-year Plan (2011-2015) puts utmost emphasis on the development of ICT in the country. A number of core targets have been identified to monitor the progress of the Sixth Plan. These monitor-able targets fall in seven broad categories, one of which is the ICT, and should have been developed by the end of the plan period. Among the contributing policies envisaged for the Sixth Plan is the introduction of appropriate ICTs based on the implementation of the '*Digital Bangladesh*' initiative.

2.9.2 Making the technology base for building 'Digital Bangladesh' is the prime focus of the Plan. The governance improvement strategy under the Plan focuses on a number of key areas including primary education. Ensuring cent percent net enrolment at primary level and digitization of the sector with a view to exploiting the benefits of ICT are among its major objectives. Due emphasis is given to improving service delivery in basic services such as education. Setting up computer laboratories at the primary schools is also included as one of the major targets of the Plan.

2.10 Third Primary Education Development Program

2.10.1 The Third Primary Education Development Program (PEDP3) is a sector-wide program to be implemented during 2011-2017 period at a total cost of around US\$ 8.337 billion including both non-development and development expenditure. As many as nine development partners are providing generous support to the Government of Bangladesh for financing this robust program. PEDP3 contains specific activities regarding digitization of operational performance of DPE. Further, sector reforms being pursued through PEDP3 will reinforce the soundness of pursuing school-level automation in a staged fashion to improve school and student performance. A key characteristic of those reforms is to be based on a decentralization policy and strong institutional capacity building at the school level.

2.10.2 One of the objectives of the program is to improve the quality of teaching-learning environment in the primary schools. Therefore, PEDP3 targets to provide access to computer technology for learning in every primary school. It also contains provisions for developing and acquiring digital educational contents for e-learning. Hence it intends to extend facilities for use of web-based resources by the teachers and students to develop and learn their lessons and also communicate their ideas allowing good practices to disseminate rapidly. It also aims at introduction of digital textbooks at the primary level based on the outcome of a successful feasibility study.

2.10.3 However, it contains a direction from the government that careful thought will be given to identify the most appropriate items in course of procurement of ICT equipment considering that the technological development in the field is occurring in a rapid pace.

2.11 Public-Private Partnership

2.11.1 The National Education Policy 2009 emphasizes on involvement of NGOs and the private sector in developing and the process of delivering primary education services. In pursuance of that policy guideline NGOs are being involved in the provision of pre-primary and second chance education. They will also be involved in providing supplementary reading materials including digital contents. Likewise, the corporate sector will be requested to provide expertise and equipment in support for the teaching-learning process in the schools as well as for the management of the digital initiative of the government in the field of primary education.

2.11.2 PEDP3 envisages conducting a study in this regard. Based on the outcome of the study and also on a thorough consultation process potential and appropriate PPP developments will be explored, identified and materialized.

2.12 Realizing Digital Bangladesh

2.12.1 The Government has envisioned switching from conventional channels of service delivery to ICT based delivery channels in building Digital Bangladesh. In this context, the Government has recently initiated two projects through the Bangladesh Computer Council (BCC), namely, BanglaGov.net and Info-Sarker, to connect all the Ministries/Divisions and other related institutions of the Government up to the upazila level. Under the BanglaGov.net project, existing NTTL infrastructure will be used to establish the government wide connectivity where all the ministries/divisions, 114 major departments, 64 DC offices and 64 UNO offices will be connected. The Info-Sarker project is the second phase of BanglaGov.net. The project will supplement the activities taken up by BanglaGov.net. The major portion of the implementation of the projects is scheduled to be completed by the end of 2014.

2.12.2 BCC has established a National Data Centre for digitized information contents and services. EPI, an international certifying authority, has certified the data centre as a TIER-3 one. The existing capacity of the data centre will be increased manifold by the end of FY 2013-14. The current storage of 10 TB will go up to 200 TB to meet the demand. New servers with capacity to host e-government applications will be added to support cloud computing.

2.12.3 In order to make electronic transactions safe, the Government has created the Office of the Controller of Certifying Authorities (CCA) to introduce globally recognized technology 'Digital Signature'. For issuance of digital certificate, a reliable technology infrastructure has been established. Six local companies have been awarded licenses to operate as Certifying Authorities. All necessary works have been completed and currently the market is ready for issuance of Digital Certificate to the end-users.

3.0 State of the art scenario

3.0.1 In the national context, use of technology is rapidly increasing in the country. Mobile service penetration is 56% now with a record of 10% increase rate than last year while fixed line penetration is 4.5%. There were 2.8 million facebook users in 2012 which is ever increasing with remarkable activities. The number of Internet users in Bangladesh in 2009 was 617,300 with a penetration rate of 0.38 percent, which rose to 7.5 million in 2012, representing a 5% user penetration by population. Different study results show that the number of internet subscribers in Bangladesh is likely to reach 18.3 million by the year 2020

translating to a 32 percent household internet penetration at around the same time. It would result in 2.6 per cent contribution to the country's GDP and create 129 thousand more jobs by the same year.

3.0.2 Computerization was introduced to replace the type-writers in DPE as back as in the mid 90s of the last century. Initially computers were used mainly for typing works, preparing letters and reports. Subsequently, preparation of a few power-point presentations and excel-based documents were also done. Presently, use of computer technology in DPE is widespread and a common phenomenon in almost every sphere of its activities. In case of writing reports, conducting workshops, undertaking school census, maintaining management information, etc., technology is being made good use of. The officials are now almost habituated to use internets, communicate electronically and maintain records in the electronic form. Even in the schools, the teachers in some selected schools of every Upazila are using information technology in the teaching-learning process. They even have the privilege of accessing into the web-based resources.

3.0.3 Type-writers have virtually disappeared. Although a few staff positions titled Steno-typist or stenographer still exists, they are gradually being phased out and replaced by Computer Operator or PA-cum-Computer Operators. However, the existing Steno-typist or stenographers are not using type-writers now-a-days. They are well-trained and comfortably using computers.

3.0.4 DPE is currently running a reasonably big IT infrastructure all over the country. The operational activities of the DPE in the headquarters as well as in the field offices and training institutes are being performed with support of the technology. Current position regarding use of ICTs in DPE is summarized below:

- a. Each one of the 55 Primary Training Institutes (PTI) has a computer lab with 20 computers and all necessary accessories. In addition, they have high-speed internets, 5 laptops each for use by the instructors and another 4 laptops with multimedia projectors as classroom aides.
- b. 12 new PTIs now under-construction will also be provided with the same outfits.
- c. Each of the 478 Upazila/Thana Resource Centers (URC/TRC) are equipped with laptops, multimedia equipment and internet.
- d. 24 new URCS are also being furnished with laptops and multimedia equipment with internet facilities.
- e. The model school in every upazila/thana (a total of 503) has a laptop with multimedia projector for use in the classrooms. These schools are also provided with internet facilities. 4 teachers of each such school have been given computer training. They have already developed multimedia classrooms and are now creating digital contents.
- f. Of late, 2 more schools in every upazila/thana are supplied with laptops and multimedia projectors including sound systems. 2-3 teachers of each of these schools are receiving computer training. These schools will receive internet modems shortly.
- g. Another 7,434 schools will receive identical equipment and training during this academic year.
- h. Within June 2016, all the 36,672 government primary schools will have multimedia classrooms and internet facilities.
- i. Every Upazila/Thana Education Office, District Primary Education Offices and the Divisional offices also have computers, laptops and multimedia equipment.

3.1 Review of current use of laptops and projectors in schools

3.1.1 Efforts have been made to assess the present situation in respect of use of laptops and multimedia projectors in the model schools. With that end in view, an e-mail was sent to all Divisional Deputy Directors, District Primary Education Officers, Upazila Education Officers and URC Instructors requesting to focus on experiences regarding use of laptops and multimedia in the model schools all over the country in the following dimensions –

- Use for academic purposes including frequency of such use
- Any abuse whatsoever
- Where and how these articles are stored
- Capacity to address any technical faults and also to ensure proper maintenance
- Usefulness in improving academic environment in the schools
- Comments on present situation
- Will the scenario be identical in case of schools other than the model schools
- Any response from local community – the SMC, parents, guardians, elected representatives, etc.
- Suggestions on how better those can be made use of.

3.1.2 They were requested to feel free to comment sincerely, and were assured that the information provided in response to the e-mail will be used for study purpose only and will not be shared with any authorities except the outcome.

3.1.3 Responses received from quite a few of them depicted a bright picture. Most of them informed about the jubilant teaching-learning environment in the schools amongst the teachers, students and the community with the new technology. They strongly recommended that multimedia classrooms should be set up in every school. At the same time, need for a systematic maintenance, regular upgrading of software, etc. was also highlighted.

3.1.4 In addition, a total of around 50 schools have been visited to gather experiences regarding on-field use of those equipment in the model schools. Efforts were also made to know the responses of the teachers and students of the schools which do not have laptop and projectors. The points on which discussions took place were the same as mentioned above. Some interesting responses were received which are summarized below:

- a. Use of computers has made teaching easier and learning more exciting in the classrooms.
- b. Computers allow teachers to be creative in lesson planning and it becomes more efficient.
- c. Finding the lesson plan as well as editing and modifying has become easy.
- d. Using the computer for administrative tasks like students' assessments, records of attendance, behavioral charts, etc. will save time and effort.
- e. Computer skills are essential for students to succeed in education and in the future workplace.
- f. Students enjoy using computers and are motivated to work on the task they are asked to do.

- g. Students with stronger technical skills are able to mentor other students, which provide opportunities to develop teamwork and leadership abilities.
- h. Students have easy access to information, pictures, illustrations, graphics, and music, which can add depth and creativity to the learning process.
- i. Students can share information with each other and with their teacher online, even outside classroom times.

3.1.5 In addition, they mentioned a few matters of concern which, they felt, must have been properly addressed well before the schools are equipped with computer technology. The matters are briefly as under –

- a. Technical problems may occur any time, so maintenance people, departmental or outsourced, should be made available nearby to provide necessary support services.
- b. There is always need for a back-up plan in case the computer does not work.
- c. There is also a need to clearly define the boundaries of using the computers in schools.
- d. Protection of teachers and students from cyber-bullying, inappropriate and/or irrelevant websites/games/e-mails is needed to be ensured.

3.1.6 Further, the teachers and students of the schools where no computers are supplied demonstrated a sense of deprivation. They claimed that they should get similar opportunities of technology-based learning.

3.2 Criticisms of computer use

3.2.1 Of late, there is a big hue and cry all over the world on use of computers in schools. It is indeed an established fact that one of the things that makes human beings so distinct, and so brilliant, is that their brains are constantly being rewired, a phenomenon known as ‘plasticity’. It means that human beings can react to and learn from their surroundings. A 2010 research in England suggested that students are losing the ability to study properly. Constant use of the internet has rewired their brains to function differently from those of earlier generations: they skip from topic to topic in an “associative” mode of thinking, and are less capable of the linear thought required for skills like reading and writing at length. Moreover, understanding requires the ability to relate one subject to something else – to place something in context. Young people are feared to lack that contextual framework and may be at risk of losing the ability to gain real understanding.

3.2.2 Comments from Dr. Dave Jonassen, Director, Center for the Study of Problem Solving, University of Missouri, is quite interesting. He opines, “I do not believe that students learn from computers or teachers — which has been a traditional assumption of most schooling. Rather, students learn from thinking in meaningful ways. Thinking is engaged by activities, which can be fostered by computers or teachers.” A number of economic studies in England including Joshua Angrist and Victor Lavy have found it hard to uncover any evidence of a positive causal relationship between computers and pupil performance. Instead, they infer that more motivated teachers may lead to both ICT adoption and better academic attainment.

3.2.3 Professor Muhammad Zafar Iqbal, a famous Bangladeshi scientist, educationist and writer, very recently wrote, “I get worried when I see that government is planning to give laptop computers and video projectors to schools so that teachers can prepare their class lecture using power point presentation for their students. Laptop and video projectors are great for seminars and talks but it does not work for teaching the Pythagoras theorem! For class teaching still there is nothing better than the good old black-board and chalk. Besides with intermittent electricity, I don’t think we can get maximum use out of it.” As the alternative he

suggests, “I think much smarter thing will be giving a simple television set and set up a separate educational channel for the students.”

3.3 Responses

3.3.1 The criticisms and research findings noted above could not stop governments around the world supporting widespread adoption of computers as the devices for effective teaching-learning in schools. A few remarkable examples include:

- The Australian government has targeted to achieve access for every student to computers at school. The Federal Government is making funds available for the schools to acquire computers and other equipment. One Laptop Per Child Australia Project aims to give out 500,000 laptops to primary school aged children by 2020. The New South Wales government will supply 120,000 computers to the public schools in a four year period.
- In Indian administered Kashmir, a total of 740 computer-aided learning centers have been set up at centrally located schools since March 2011. Each centre has at least five computers including a transformer, and a generator to keep the machines working all day long. Situation in the schools of other states are undoubtedly better.
- The Royal Bhutan Government very recently launched One Laptop per Child (OLPC) project targeting to provide XO laptops to the students of the primary schools across the country. These laptops have applications on animations, mathematics, language, word processing, and so on, that will enable students to learn concepts in a meaningful way.
- In Nepal, the One Laptop per Child initiative commenced as back as in April 2008.
- Under its ICT plan, the Barbados government provided multimedia tools for classrooms, and PCs and laptops in staff rooms. In addition, every primary school was supplied with 1–3 computers in each classroom, 1 computer lab per school with less than 500 students, and 2 labs per school with more than 500 students.
- Under the School-based Telecenters Project in Uganda, schools are provided with ICT laboratories with a requirement that the surrounding community could use the laboratory after school hours and during the weekend.
- Since the early 2000s all main political parties in Italy have made ‘computers in schools’ part of their educational programs.

3.3.2 Likewise, almost all the countries in the world, developing and the developed, have adopted and are implementing extensive ‘ICT in Education’ program, and computer is increasingly becoming an essential tool for development of education.

4.0 ICT in DPE: The Focus

4.0.1 The DPE ICT Strategic Vision focuses its priority to improving performance by delivering better services to the people. It provides the direction for the use of ICT in the primary education sector. It signals a shift of emphasis from automation or computerization to better and improved performance and service delivery. DPE will use ICT to deliver better services and improve operations and processes to capture, understand, and deliver people’s preferences in line with the Governmental policies. More targeted

consultation and collaboration, increased availability and use of information and a stronger understanding of ICT capability will result in sustainable policy development.

4.0.2 The prime purpose for investing in ICT resources in the primary education sector is to improve the quality of teaching and learning. The schools will be enriched and strengthened with ICT tools. This will enable students of disadvantaged localities to have adequate materials of learning. Development of computer-aided learning packages on different subjects will also aid students adequately. At the same time, the offices, institutes, etc. will also be equipped with ICT materials as necessary.

4.1 Improve Operational Performance

4.1.1 This Vision focuses on improving the productivity of DPE operations through more targeted ICT investment enabling more efficient and effective processes. ICT capability and investments should be made better use of keeping in view possible funding constraints at any point of time. The actions necessary in this respect will involve better targeting ICT investment to drive greater efficiency and productivity in the operational performance of DPE and, at the same time, encouraging innovation. The expected outcomes will be:

- better-informed officials,
- well analysed and soundly developed investment proposals,
- understanding of alternative approaches and solutions, and
- awareness of the cost implications of decisions, especially where ICT choices impose costs elsewhere or reduce the flexibility or value that can be delivered.

4.1.2 Better, more informed, decisions when investing in ICT can significantly reduce the costs of administration and service delivery. DPE is committed to follow the guidelines provided by the government in the field. In addition, implementation of transparency measures delineated under the ‘**National Integrity Strategy**’ will also be given top priority.

4.2 Improve School Operations

4.2.1 The operational performance of the schools will be improved with the help of technology, and in this respect the following priorities will be taken care of:

- a. *Computerization of School Management:* The management functions of the schools will be performed electronically. Necessary data relating to school operations will be maintained and submitted to higher authorities in soft form mainly through internet-based communication channels. The day-to-day affairs of the schools will also be gradually digitized.
- b. *Computer-Supported Learning in Schools:* Use of technology in the teaching-learning process will be introduced in all the primary level educational institutions in phases and will be completed within 5-7 years. Educational contents will be developed, maintained and delivered digitally. Training in IT for 100% of the teachers will be given on a priority basis.
- c. *Computer Education in Upper Classes:* The issue of introduction of basic computer education in grades IV and V will be examined. However, the subject will be specified at the higher level, i.e., grades VI to VIII whenever included in the primary schools following the guidelines of the National Education Policy.

4.3 Computers for students

4.3.1 Some students have access to computers at home, while others do not. Providing opportunities to work on computers at school create a level-playing field by ensuring that all students have the scope to use the computer to complete their assignments. Therefore, it is imperative that opportunities for every student, especially those belonging to the disadvantaged classes, to get direct access to computers have to be created in the schools. This concern will be addressed by setting up computer laboratories in every school to facilitate students' practicing computers during school hours whenever they like or they are free. Construction of one additional room and provision of necessary furniture and equipment will also be required.

4.4 Digital Content Program

4.4.1 This strategy will devote maximum efforts towards development of digital contents. It will develop high quality curriculum-based digital content for use by the schools all over the country. It will also create and maintain an e-library for digital educational materials. The main source of digital contents in DPE e-library will be from the teachers all over the country. Possible other sources outside DPE will also be explored in an economic way and attaching top most priority on the quality aspect.

4.4.2 To improve ICT skills among the students, a broad-based strategy will be developed that will make digital content available for educational purposes, including a guideline on cyber safety. With a view to rewarding innovations in the field, DPE will organize annual fair to create opportunity of demonstration of educational materials developed by the instructors, teachers and staff of DPE as well as those from the private sector. Side by side, a competition will also be organized involving the teachers, students, officers and staff of DPE.

4.5 Digitized functioning of offices

4.5.1 With active support from NESS and based on the experiences of Jessore, DPE intends to digitize its functioning all over the country. The headquarter, all the divisional, district and upazila offices, all institutes, centers and other establishments under the DPE will work electronically within next five years or so. Initially, to start with a small segment of the DPE headquarter will be brought under the program. It will be sufficiently equipped with ICT tools, the officers and staff will be trained and start working electronically. The decision making process, communication, record keeping, etc. will be done using ICT tools in those offices.

4.5.2 Subsequently, this program will be extended to whole of the DPE structure at the center and in the field in phases considering the availability of resources and other relevant factors. In the next phase the DPE headquarters and 3-5 selected districts will be digitized. After that other districts (around 10 districts at a time) will be taken up. A detailed work plan will be prepared and agreed upon with NESS incorporating a specific target and timeline. DPE will assess the requirement of manpower and equipment, make them available in due time, and facilitate the process of functioning digitally by those offices, while NESS will take the responsibility of providing training to the officers and staff, monitoring the implementation of the program, etc.

4.6 Creating Information Base

4.6.1 Management information system makes it easy to collect, store, manage and analyze all relevant information. Therefore, a strong information base will be created to support efficient policy making in the

field of primary education. It will be online enabled to facilitate open access for the teachers, students and all other interested quarters. The information base will generally comprise, inter alia, of the following:

- An interactive primary education MIS.
- A useful office management system that will include:
 - Personnel Management Information System (PMIS); and
 - Financial Management Information System (FMIS).
- Primary Education Information Management System (PEIMS) covering:
 - detailed information of the primary level educational institutions
 - online reporting and feedback system for the schools
 - school inspection information
 - performance auditing system
 - academic supervision system
 - professional development programs
 - electrically integrated data on continuous professional development (CPD)
- Financial Management Information System (FMIS) will cover:
 - computerization of accounting system
 - software-based advance tracking system
- A database of the students in coordination with birth registration and national population database to help locate everyone as and when required.
- A database of the Head Teachers and Assistant Teachers of the primary schools.

4.7 Online Services/Resources

4.7.1 Efforts will be made to improve every process through introducing online facilities for the teachers, students and general members of the public so that the services they require can be delivered efficiently and quickly. Such services may include:

- Online services for students for the purposes of admission, registration, progress report cards, filling up of exam. forms, submission of fees, receipt of certificates, etc.
- Online publication of results of all public examinations, recruitment examinations, outcomes of tender processes, etc.
- Online invitation and receipt of applications for teacher recruitment including processing and publication of results with access through mobile phones enabled.
- Online publication of employment notice for recruitment of officers and staff including receipt of applications, sorting and scrutiny of applications, issuance of admit card and interview card, publication of exam dates, final results, etc.
- Online opinion polls will be conducted frequently to assess public opinion on any important event organized, or any important decision taken, by DPE.
- An online Primary Education Forum with blog facilities and equipped with all information on primary education in Bangladesh will be created.

4.8 Cloud computing

4.8.1 Cloud computing offers the potential for flexible and cost-efficient computing solutions by using the internet to access software, hardware and storage solutions in a convenient, on-demand and flexible way. In Bangladesh, the shape of the cloud is emerging, and it is developing rapidly both conceptually and in reality. Hopefully, it will transform the way IT is consumed and managed, promising improved cost efficiencies, accelerated innovation, and the ability to scale applications on demand. However, the legal/contractual, economic and security aspects of cloud computing are still relatively immature. Government is encouraging greater use of cloud computing where it provides better value for money than the alternatives. DPE will make good use of cloud facilities provided that the related issues can be resolved satisfactorily.

4.9 Maintenance of IT Equipment

4.9.1 The use of any computer equipment or software will always bring with it a degree of risk. It should be considered what that risk might entail and looked at ways to minimize it. DPE will take steps to introduce an ICT Risk Management Guidelines detailing how the chances of hardware failure and data loss will be minimized. Facilities to have regular backups of data will be created at both in-house and outer sources.

4.9.2 Proper maintenance is crucial to the longevity, sustainability and fruitful use of any technology. Every computer, whether desktop or laptop, in DPE including the field establishments will be installed with online-certified, dependable and high quality antivirus software to ensure protection against internet crimes and any possible damage to the computer. The antivirus software will always be kept updated so as to securing a high degree of protection against any sort of virus or cyber attacks.

4.9.3 Simultaneously it is necessary to have dedicated ICT support staff at crucial points to ensure smooth maintenance of IT equipment. DPE will expand its maintenance network currently in Dhaka only and to the field level offices as well. In every district, there will be stationed at least one Assistant Maintenance Engineer with other necessary outfit under the jurisdiction of Information Management Division (IMD). The Asstt. Maintenance Engineer will be placed at the disposal of the DPEO of the respective district. Consideration will also be given to deploy one computer operator-cum-technician in every upazila/thana under the administrative control of the Upazila Education Officer and supervision of the Assistant Maintenance Engineer. In addition, DPE will explore the possibility of outsourcing the maintenance job to any private firm having necessary facilities and technical manpower at the district level. Involvement of the SMCs and the community as a whole will be pretty useful to ensure proper maintenance of the IT equipment at the grassroots level.

4.10 ICT and sustainability

4.10.1 Sustainability of ICT operations through a good environmental management process in place is crucial to the success of an ICT Plan. ICT sustainability is reflected in the responsible acquisition, installation, use and disposal of information and communications technologies and related services with a view to utilize resources more effectively, improve efficiency, increase productivity and reduce the environmental impact of the operational activities.

4.10.2 In fact, judicious purchasing, use and disposal of ICTs can improve sustainability. It can reduce carbon emissions through managing energy cost and use, reducing the environmental impact of communities and improving infrastructure management. To that end, the objectives of this ICT strategic vision are to:

- follow strictly the environmental standards, whatever is fixed by the Bangladesh Standards and Testing Institution (BSTI) or any other competent authority, in purchasing of ICT products and services; and
- introduce measures to improve environmental performance of ICT, particularly in terms of rational use and energy efficiency.

4.10.3 DPE including its field level offices, institutes, URC/TRCs, and schools currently manage significant quantities of ICT equipment such as, PCs and laptops, printers, multimedia projectors, internet modems, servers and imaging devices, etc., as well as the consumables used in the equipment such as toner cartridges. This quantity is set to increase manifold in a span of around 5-6 years when every school will have laptops, projectors and sound systems. This volume of activity raises not so insignificant environmental management concerns over the life cycle of products, mainly relating to energy use, carbon emissions, e-waste and hazardous materials, packaging and the sustainable use of precious and scarce metals.

4.10.4 Therefore, this ICT Strategy and Plan will follow the principle of implementation of sustainable procurement methods and practices in relation to ICT. It aims to-

- avoid unnecessary demand and consumption;
- procure more environmentally responsible products and services;
- include provisions on energy efficiency in bidding documents and procurement notices;
- give due importance to those provisions in course of bid evaluation;
- assess ICT products on a life cycle impact basis; and
- follow sustainable re-use and disposal policy, etc.

4.11 Economy and Efficiency in ICT Investment

4.11.1 Investment in ICT delivers measurable benefits in efficiency and effectiveness. With a view to monitoring the effectiveness of ICT investments, DPE will conduct annual benchmarking analysis of ICT expenditure, based on efficiency and effectiveness metrics. Such analysis will be refined every year to provide detailed information on ICT activities, investments and plans. This greater transparency will lead to better strategic investments focusing on re-using and/or modifying existing capability, or buying/building new capability for use in different units of DPE.

4.11.2 Understanding the full costs, implications and the possible consequences of decisions to adopt and use different ICT systems will be strengthened. For example, the use of commodity hardware, off-the-shelf software, virtualization and cloud computing will drive increased capability and improve efficiency through lower customization and integration costs. DPE will continue its efforts to reduce duplication of procurement efforts and simplify suppliers' involvement in procurement. At the same time, printers will be shared in every office or institute. Likewise, wifi system will be preferred instead of providing internet connections to every individual computer or laptop with broadband or edge modem.

4.11.3 In case of new purchases diligent approaches should be adopted to ensure value for money in view of the available options in the market. At the start of every financial year a market survey will be undertaken to trace what's new or improved in the market. Considering all options, a decision shall have to be taken about possible shifts in technology available in the market in the first quarter of the financial year targeting

the goal of economy, efficiency and effectiveness. Accordingly, procurements for that financial year will be carried on.

5.0 Implementation

5.0.1 The Government believes that technology is guaranteed to bring prosperity and happiness to the human race with quite a few obvious possibilities. With that end in view, DPE will implement this strategy and plan under overall guidance of the government. A small and dedicated coordination unit in DPE will provide necessary support to govern the implementation of this ICT Strategic Vision. The unit will play a critical role in working with field offices and institutes to ensure that the Vision is delivered.

5.1 The Road Map

5.1.1 This Strategy and Plan has 10 strategic objectives which are expected to be achieved within a specific time period. Following is a tentative action plan elaborating specific actions against those objectives to be materialized within the given time limit. Every action item will be implemented within the indicative timeframes, e.g., short-term, mid-term and long-term. Short-term is meant to be within next 3 years or so, i.e., the PEDP3 period, mid-term will be longer than 3 years but not more than 8 years coinciding with the possible PEDP4, while long-term will be longer than 8 years meaning beyond PEDP4 period.

Sl. No.	Actions Required	Responsibility	Short-term	Mid-term	Long-term	Remarks
Strategic Objective 1: Better delivery of services.						
1.	Deliver new and better ICT enabled services	Director (A) & Director (IMD)	√			On-going
2.	Simplify and make consistent processes to enable improved and more standardized approaches to service delivery and ICT capability	Director (A) & Director (IMD)	√			On-going and to continue
3.	Design and develop a new interactive web page for DPE as a “one-stop center” for delivering e-citizen services	Director (IMD)	√			
4.	Ensure use of multimedia resources in classroom teaching as well as for teacher training	Director (P&O) Director (T)	√			On-going and to continue
5.	Establish at least one independent multimedia classroom in every school	Director (IMD)		√		
6.	Convert every classroom in every primary school into a multimedia classroom to facilitate use of ICTs	Director (IMD)			√	
7.	Arrange substitute power source, solar or others, to ensure regular supply	Director (IMD)		√		
8.	Supply laptops and multimedia equipment with solar system to schools where grid electricity is not available	Director (IMD)		√		
9.	Ensure internet connectivity for all URC/PTIs	Director (IMD)	√			
10.	Ensure internet connectivity for all schools	Director (IMD)		√		To continue
11.	Develop digital contents in local languages for teaching-learning in the classrooms	Director (T)	√			To continue

12.	Create provision for outsourcing partners for development of digital contents suitable for child education	Director (T)		√		
13.	Provide incentives to teachers for e-learning content development	Director (P&O)		√		
14.	Organize regular national competitions amongst the teachers and instructors on digital content development	Director (IMD)		√		to continue
15.	Organize annual fair to create opportunity of demonstration of educational materials	Director (IMD)		√		
16.	Develop a broad-based strategy to ensure availability of digital contents for educational purposes	Director (A)	√			
17.	Facilitate orientation of primary school students on computer-related technologies	Director (IMD)	√			to continue
18.	Enable all students to have general knowledge of computers, software and their benefits	Director (A)		√		
19.	Create online services for all students for admission, registration, progress report cards, filling up of exam forms, submission of fees, etc.	Director (IMD)		√		
20.	Develop a Model School as an Information Access Centre with ICT facilities for teachers and students in every union	Director (IMD)		√		
21.	Establish one computer lab for each school with at least 20 computer terminals	Director (IMD)			√	
22.	Assess feasibility of introduction of digital textbooks in primary schools	Director (A)		√		
23.	Introduction of digital textbooks for use by the students of primary schools	Director (A)			√	
24.	Increase use of radio and television for transmission of educational programs for both students and teachers	Director (P&O)	Ensure 4-hour radio & TV broadcast	Ensure 8-hour radio & TV broadcast	Ensure 16-hour radio & TV broadcast	
25.	Supply television sets to every school and office	Director (A)	√			to continue
26.	Establish a system of e-learning and distance education	Director (T)		√		
27.	Ensure access to education for children with special needs including those in isolated rural communities using ICT tools	Director (P&O)		√		
28.	Ensure access to education using ICT tools for children belonging to ethnic minorities	Director (P&O)		√		
Strategic Objective 2: Better and improved capability.						
1.	Ensure ICT training for at least one teacher of every school	Director (T)	√			
2.	Ensure ICT training for all the primary school teachers	Director (T)		√		
3.	Organize IT training for all staff working at the Headquarters and the field offices	Director (T)	√			on-going and to continue

4.	Make provisions for incentives/special loans/performance-based grants to teachers to acquire ICT tools	Director (A)				
5.	Procurement and installation of necessary equipment for divisional, district and upazila offices	Director (F&P)	√			on-going and to continue
6.	Procurement of IT equipment for the DPE Headquarters to enable digitization	Director (F&P)	√			on-going and to continue
7.	Prepare a detailed work plan to function digitally in a given time frame	Director (IMD)	√			
8.	Provide necessary IT equipment to the field offices and schools to enable them to work digitally with the Headquarter	Director (IMD)		√		
9.	The library/book corner in each school will have enough books on IT	Director (A)			√	
10.	Build capability across DPE to manage and deliver ICT enabled programs	Director (IMD)	√			
11.	Increase awareness and use of existing technology capabilities	Director (IMD)		√		
12.	Build on existing ICT workforce planning approaches to make better use of the ICT skilled workforce across DPE	Director (IMD)		√		
13.	Generate ideas through challenges and competitions to create opportunities for external and internal ICT innovation	Director (IMD)		√		
Strategic Objective 3: Better access to information.						
1.	Develop standards and a total direction for the use of location-based information across DPE	Director (M&E)	√			
2.	Create capability within DPE to capture, share as appropriate, and analyze information so that trends can be identified and used to better inform policy development	Director (M&E)		√		
3.	Ensure proper maintenance of records relating to teachers, students and the officials	Director (M&E)	√			
4.	Develop online individual student tracking system with date of birth to be operated at the school level	Director (IMD)	√			
5.	Create information system for all schools and teachers (including personal information) in the same platform	Director (IMD)	√			
6.	Make all information available to the people through electronic media	Director (IMD)		√		
7.	Online publication of results of public examination	Director (IMD)	√			
8.	Set up a national library of e-learning contents and make available for use by the primary teachers and students	Director (IMD)		√		
9.	Development of links with other government database systems	Director (IMD)	√			

10.	Establish a central data center with adequate hardware, software, security, sharing and preservation system	Director (IMD)		√		
11.	Publish all publications digitally in Bangla and English using a standard encoding to guarantee portability	Director (A)		√		
12.	Mandate all eligible information to be made accessible through appropriate electronic means including SMS and other channels	Director (A)			√	
13.	Establish a Primary Education Management Information System (PEMIS)	Director (M&E)		√		
14.	Build an effective office management system including Personnel Management Information System (PMIS) and Financial Management Information System (FMIS)	Director (A)		√		
15.	Prepare a comprehensive student database in coordination with birth registration and national population database.	Director (M&E)		√		
16.	Prepare a database of the Head Teachers and Assistant Teachers of the primary schools	Director (M&E)		√		
Strategic Objective 4: Better internal and external communications.						
1.	Introduce proper system to communicate with people	Director (A)	√			
2.	Use appropriate tools in a targeted way to engage with people to improve peoples' participation in policy development and better service delivery	Director (A)	√			
3.	Automate processes to improve interactions with the people	Director (A)	√			
4.	Create opportunity for the members of the public to leave their comments and suggestions on school performance and functioning of DPE	Director (A)	√			
5.	Build an online channel of communication with the teachers, students, officials and the members of the public through frequent use of technology-based communication tools	Director (A)	√			
6.	Introduce a mobile communication network involving every school and every officer at the center and the field level	Director (A)	√			
7.	Supply mobile SIM cards and mobile phones to the schools and officers	Director (A)	√			to continue
8.	Continue and improve functioning of blog https://www.facebook.com/pages/প্রাথমিক শিক্ষা ফোরাম/	Director (A)	√			
9.	An online Primary Education Forum with blog facilities and equipped with all information on primary education in Bangladesh will be created	Director (A)	√			

10.	Introduce an interactive online teachers' platform so that the teachers can easily interact among themselves and directly contact with the top management of DPE	Director (A)		√		
11.	Introduce an interactive online platform for the field level officers and staff for direct contact with the top management of DPE and interaction between them	Director (A)		√		
12.	Create an online platform for students to interact with their teachers and fellow students	Director (A)		√		
13.	Explore partnerships with corporate sector, academia, the community and the third sector to inform policy and deliver services	Director (A)		√		
14.	Establishment, regular updating and maintaining of a National Education Portal (with blog facilities)	Director (A)		√		
Strategic Objective 5: Better staff development.						
1.	Ensure professional development of teachers through ICTs	Director (I)	√			To continue
2.	Include topics relating to ICTs in the curriculum of primary teachers' training	Director (I)	√			
3.	Provision of advanced in-service training on ICT for primary teachers	Director (I)		√		
4.	Supplying books on ICT in easy Bangla language to every school	Director (A)		√		
5.	Develop online course contents/modules for teachers training	Director (I)		√		
6.	Organize online courses for teachers training	Director (I)		√		
7.	Make ICT training a pre-condition for being recruited as an Assistant Teacher	Director (P&O)	√			
8.	Make Diploma in ICT a pre-requisite for being directly recruited as a Head Teacher	Director (P&O)	√			
9.	Recognizing Degree/Diploma in Computer Science as a preferable qualification for appointment as a Head Teacher or Assistant Teacher	Director (P&O)	√			
10.	Organize professional training on ICT for all officers of DPE	Director (I)		√		
11.	Provide basic and advanced computer training to all staff of DPE					
12.	Make provisions for future recruitments at the staff level with mandatory provisions of IT literacy	Director (A)	√			
13.	Mandate basic computer and internet literacy for all Class I and II appointments	Director (A)	√			
14.	Ensure no promotion to national pay grade 9 without demonstration of basic computer and internet literacy	Director (A)	√			
15.	Insert new criteria for assessment of basic computer and internet literacy in the ACR of officers as well as staff	Director (A)	√			

Strategic Objective 6: Better transparency, openness and accountability.						
1.	Sharing of experiences and resources with non-governmental organizations	Director (IMD)	√			
2.	Make PEMIS available online for all interested quarters	Director (IMD)	√			
3.	Make reports on APSC, ASPR, NSA, etc. published online	Director (M&E)	√			
4.	Make all DPE tenders available online	Director (F&P)	√			
5.	Allow submission of bids online	Director (F&P)	√			
6.	Introduce e-tendering practices in DPE for selected procurements	Director (F&P)	√			
7.	Online publication of results of all public examinations, recruitment examinations, outcomes of tender processes, etc.	Director (IMD)	√			
8.	Introduce e-tendering practices in DPE for all procurement related matters	Director (F&P)		√		
9.	Publish public procurement notices in at least one tender portal operated by the Bangladeshi ITES providers	Director (F&P)		√		
10.	Implement the National Integrity Strategy in DPE	Director (A)	√			
11.	Conduct online opinion polls to assess public opinion on an event organized, or a decision taken, by DPE	Director (A)		√		
Strategic Objective 7: Better administrative and management practices						
1.	Allocation of sufficient funds for smooth implementation of this strategy	Director (P)	√			To continue
2.	Create an Information Management Division (IMD) in DPE	Director (A)	√			
3.	Ensure recruitment and placement of ICT professionals for IMD	Director (A)	√			
4.	Ensure online data collection and processing for Annual Primary School Census, National Student Assessment, annual book distribution monitoring system, etc.	Director (IMD)	√			
5.	Institutionalize IT practices in primary schools including sensitization of teachers and students	Director (IMD)		√		
6.	Institutionalize/Sensitize divisional, district and upazila level offices including the officials	Director (IMD)		√		
7.	Institutionalize/Sensitize primary training institutes including the officers and staff	Director (IMD)		√		
8.	Institute administrative restructuring programs to promote IT practices	Director (A)		√		
9.	Conduct O&M study to facilitate introduction of IT-enabled practices in offices and schools	Director (A)		√		
10.	Develop institutional buy-in, incentive mechanisms and leadership for leveraging ICTs for service delivery	Director (A)		√		

11.	Institutionalize use of electronic medium for official communications, file processing and exchange of information	Director (A)		√		
12.	Publish all recruitment notices online including the relevant service web portals	Director (A)	√			
13.	Online publication of employment notice for recruitment of officers and staff including receipt of applications, sorting and scrutiny of applications, issuance of admit card and interview card, publication of exam dates, final results, etc.	Director (A)	√			
14.	Provision of online invitation and receipt of applications for teacher recruitment including processing and publication of results with access through mobile phones enabled	Director (P&O)	√			
Strategic Objective 8: Better supervision, monitoring and evaluation.						
1.	Install software-based monitoring system of inspection activities	Director (M&E)	√			To continue
2.	Deploy computer-based project planning, resource allocation and monitoring system	Director (P&D) Director (P)	√			
3.	Introduce software-based online system for monitoring of textbook production and distribution activities	Director (A)	√			
4.	Install software-based monitoring system for an efficient personnel administration	Director (A)	√			
5.	Install online monitoring system for tracking progress and implementation status of various civil works	Director (P&D)		√		
6.	Introduce electronic tracking system to ensure proper functioning of the schools including teacher and student attendance	Director (P&O)		√		
7.	Online tracking of inspection of schools by the officers at the field level as well as from the headquarters	Director (M&E)		√		
Strategic Objective 9: Better sustainability of ICT operations.						
1.	Develop a portfolio approach to strategic ICT investments	Director (IMD)	√			
2.	Increase visibility of ICT activities, investments and plans to reduce duplication	Director (IMD)	√			
3.	Target new areas for coordinated ICT procurement to reduce costs and remove duplication	Director (IMD)	√			
4.	Quickly adopt new ICT models through balancing issues of performance, usability, security, privacy and investment.	Director (IMD)	√			
5.	Undertake once in every financial year a market survey to track availability of newer and advanced technology	Director (IMD)	√			

6.	Conduct annual benchmarking analysis of ICT expenditure, based on efficiency and effectiveness metrics	Director (IMD)	√			
7.	Select energy saving and low power consumption ICT devices for procurement	Director (IMD)	√			
8.	Follow governmental directions for safe disposal and recycling of ICT devices	Director (IMD)	√			
9.	Reduce use of paper in offices by increasing electronic communication, file processing, information sharing and archiving	Director (A)	√			
10.	Promote environmental protection through use of ICT tools	Director (A)	√			
11.	Prepare an ICT energy management plan to facilitate improvements in technology, infrastructure and practice	Director (IMD)	√			
Strategic Objective 10: Better maintenance, security and privacy						
1.	Every computer will be protected with online-certified, dependable and high quality antivirus software	Director (A) & Director (IMD)	√			On-going
2.	Ensure use of licensed software in every computer and laptop	Director (F) & Director (IMD)	√			On-going
3.	Install appropriate mechanism for protection of children from harmful digital content	Director (IMD)	√			To continue
4.	Include similar knowledge in the curriculum of class IV and V	Director (T)	√			
5.	Undertake a social awareness campaign to train parents on how to filter content harmful to children through websites and TV programs	Director (IMD)	√			To continue
6.	Create advocacy programs to create awareness about contents harmful to children	Director (IMD)	√			To continue
7.	Install sustainable arrangements for regular, routine and emergency maintenance of every IT instrument	Director (IMD)	√			
8.	Ensure greater involvement of SMCs and the community as a whole for better maintenance services	Director (IMD)		√		
9.	Execute maintenance contracts with capable outsourced technical organization	Director (IMD)		√		
10.	Employ maintenance Engineers at the district level and senior computer operator-cum-technicians at the upazila level	Director (IMD)		√		
11.	Data Center and facilities will have regular backups of data	Director (IMD)		√		
12.	ICT Risk Management Guidelines will be prepared to minimize the chances of hardware failure and data loss	Director (IMD)		√		

5.2 Responsibility for Implementation

5.2.1 It is not easy for an organization to make ICT a priority if there is no one within that organization who has been given specific responsibility for it. A named officer or post within the Organization should, therefore, be given responsibility for overseeing ICT. Presently such responsibility is bestowed upon the Director (Monitoring and Evaluation) who oversees the MIS Unit. But it will be shifted to the System Manager of Information Management Division (IMD) as soon as it is created.

5.3 Financing

5.3.1 The most important aspect of this strategy is that it will be difficult to extract its optimum benefit without allocating required financial resources. The recurring costs to cover internet bills, software and maintenance costs, etc. will gradually account for a sizable amount. Therefore, a sensible and sufficient ICT Budget should be considered as unavoidable in planning every financial year's budget. Nevertheless, allocation of sufficient funds in the regular budget of DPE will be highly critical for proper implementation of this strategy. However, measures will be taken to manipulate adequate budgetary resources in every financial year for preparation and implementation of different initiatives under this strategy. In addition, efforts will be made to mobilize some extra-ordinary financing outside the budgetary framework especially for implementation of the school-centered interventions. Sources of such financing may include the corporate sector under the CSR activity, the business tycoons and other affluent people in the society, etc.

5.4 Monitoring and Review

5.4.1 This ICT Vision and plan will be monitored and coordinated by the Director General, Directorate of Primary Education. In addition, a high-level committee will be responsible to oversight the implementation of this Strategic Vision and Plan:

a. Additional Director General, DPE	Chairperson
b. Director (Administration), DPE	Member
c. Director (Finance), DPE	Member
d. Director (Planning & Development), DPE	Member
e. Representative of MoPME	Member
f. Representative of Ministry of ICT	Member
g. Representative of BUET	Member
h. Representative of Bangladesh Computer Council	Member
i. Representative of Bangladesh Computer Samity	Member
j. Representative of Dhaka Ahsania Mission	Member
k. Representative of BRAC	Member
l. Sr. System Analyst, DPE	Member
m. Director (Monitoring & Evaluation), DPE	Member-Secretary

5.4.2 The committee will formulate a modus operandi for monitoring and evaluation of this plan, based on which the progress of implementation of this plan will be overseen. It will meet at least once in every quarter and submit its findings to the Director General from time to time. It will play a key role in driving the efficiency and effectiveness of DPE's use of ICT including coordinated ICT procurement and ICT investment management. The committee will collect and analyze information to assist in setting future directions. The action plans will be reviewed by the committee on an annual basis to ensure that it continues

to target the most crucial priorities and aligns with the Government's Strategic Plan. It will also be reviewed for implementation status checks, necessary reprioritizations and any possible and necessary changes in programs.

6.0 Conclusion

6.0.1 The ICT Strategic Vision and Plan contains DPE's vision and direction for the use of ICT for the next five years. It will be implemented under the broad guidance of the Government's ICT strategy and work plan. DPE will work closely with stakeholders within and external to implement this Vision. Hopefully, this Strategic Vision and Plan will succeed in paving the way for DPE to achieve its targets.

"We are the most resilient nation in earth, floods or cyclones torment us regularly, but we can fight back and start a new life with the minimum help or support. Most importantly, we have a new generation who are patriotic. They love their country and are proud of it. I think we can dream of a new Bangladesh along with this new generation."

– Muhammad Zafar Iqbal, an educationist, a popular writer and an eminent scientist.

