



Impact of ICT Integrated Quality Primary Education in Bangladesh: A Content Analysis

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Abstract

Information and Communication Technology (ICT) may change the way of livelihood and education system of a country in a radical way. More importantly this should not be education only; it must be quality education and the effectiveness of quality education of a country mainly depends on the policy guideline. “Digital Bangladesh” and “Vision 2021” for the national developments is the key issue of present phenomenon of Bangladesh. This research made an effort to determine the present status of access to ICTs in primary education and the major challenges for ICT integration. From this study, a number of key policy questions related to political commitment; infrastructure; teaching staff development; curriculum; usage; participation; skills; output and outcomes and impact. These factors should be understood within the context of a larger operational and conceptual framework for ICT integration in primary education. Government also may be given the best important focus on content development, inclusive recruitment rules and equal facility among the urban and rural school, ensuring electricity and internet with digital devices, systematically monitoring progress with career guidance for students, to improve their academic performance eventually. This study used content analysis in terms of qualitative approach to assess the major weakness of ICT integration for primary education. Some of the articles were reviewed from relevant documents, academic articles, national & international organizations’ reports, etc. and some suggestions have been drawn.

Keywords: Information & Communication Technology (ICT), Quality Education, ICT Policy, Digital Device, Digital Content, ICT Infrastructure.



1. Introduction

“Digital Bangladesh” and the “Vision 2021” stand as a political commitment of present government of Bangladesh (Islam and Gronlund, 2011). The set of targets of “Digital Bangladesh” were mainly harmonizing use of ICT in all fields to ensure e-service, e-commerce, e- governance & especially e-education by adopting digital devices and content for everyone. This includes all classes of people and are not discriminated in terms of technology (www.a2i.gov.bd). The set of solid development targets of “Vision 2021” were mainly sustainable annual rate of GDP 10% substantially to eradicate poverty of people below line to 15%, reduce unemployment rate to 15%, ensure food for all at least 85% of the population by 2021. Especially, eradicate illiteracy by ensuring 100% net enrolment at primary level and turn Bangladesh into a country of educated people with adequate skill ICT by 2021 (Azad, S.M.,2016). Besides this Millennium Development Goals (MDGs, 2000), Goal-2 pays attention “to achieve Universal Primary Education” by 100% enrollment. Then United Nation adopted Sustainable Development Goals (SDGs, 2015), while Goal-4 paying attention on “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” among the 17 Goals of SDGs (<http://www.un.org/>). However, Bangladesh faces the challenge of ensuring that all of this young population receives quality education. One of the main hurdles is the limited ICT integrated education in early life and limited access ICT to primary school children.

2. Review of Literature

Bangladesh Education Statistics (2015) stated “Education as the pivotal tool of the development of any country”. Education must be treated an investment in human resources and not as an expensive social-service activity. An education system is a weapon for implementation of a nation's hopes and aspirations and for building a new knowledge-based society. BANBEIS (2015), reported education system as a mix of heterogeneous provider. A variety of school operates with in the country; government run schools; privately run schools and madrasah. English medium schools run by NGOs and kindergarten schools. Annual Primary School Census (2015), was conducted by DPE has shown total primary school were 1.22 lacs students were 19.067 million in 2015 through 26 types providers. Among them Govt. primary school covered 13.79 million (72%) students, teachers were 5.277 lacks where 60% female teachers and the boy’s vs. girl’s ratio were 49:51 consequently and Teachers and Students ratio shown 1:36 respectively. Shahrina Mou (2016) mentioned in her article teachers are the main stakeholders in integrating ICT into pedagogy.



ICT refers to components of integrated arrangements of devices; tools; services and practices that enable information to be collected; processed; stored and shared with others. In this research, ICT is used to refer to all ICT hardware devices, computer networks and software applications that can be used by students, teachers to execute teaching practice tasks such as teaching; planning; scheming; educational media; writing college assignments and recording primary school pupils progress. Such information and communication technologies (ICTs) include printers; laptops; digital cameras; computers; cell phones; music composition software and the Internet among others (Pena-Lopez, 2009).

Gilbert Gilibrays Ocen, Gilbert Barasa Mugeni and Matovu Davis (2016) mentioned that ICTs can provide direct connectivity to remote areas and rapid deployment, short term solution for emergency response or relief teams, and enable interoperability among user groups and between different systems and networks. Parvin, S. (2013) stated in her research that ICT has begun its presence within education. ICT is the growing demand in everyday life, the Government of Bangladesh (GOB) and NGOs are trying to integrate ICTs as an innovative approach in education. Teaching, learning materials (multimedia CD/DVD, animation and audio/video) have been developed by using ICTs for recognizing the strength of digital media. She stated that challenges in education sector of Bangladesh are huge. For producing and offering goods and services at relatively low costs, Information, Knowledge and Communication Technology also play a vital role. The GOB and NGOs have been made realization about the potential of ICTs in all sectors especially in education. Bangladesh Government has put a lot of effort to fulfill MDGs target (what has not been achieved yet) and to achieve the target of SDGs, Digital Bangladesh and Vision 2021. In Bangladesh, there had been studies on the ICT integration in education as well as primary education ((Rahman & Akter (2017); Mridha & others (2013)). However, UNESCO & COL (2015) focused on Open Education Resource; Rahman & Akter (2017) focused on ICT for rural areas school and Mridha (2013) focused on curriculum. Since the ICT is changing quickly, it would be definitely beneficial to do more research in order to modify the policy principles and to introduce new level of ICT integrated primary education in Bangladesh as per changing scenario.

Hossain (2018) discussed that Bangladesh Open University (BOU) initiated virtual class room from 2000 through 12 regional centers, 6 schools and 1106 study centers where the enrollment students exceeding 300,000. According to BANBEIS Report (2015) & MoE (2018), 69.21% primary school connect with Electricity and 15.92%, 14.87%, 32.27%, 21.23%, 12.31% have to had Solar Panel, No Electricity & Solar Panel, Computer, Internet, Multimedia simultaneously. Alam, M.S (2012) emphasized the United Nations Development Programme (UNDP) project, Access to Information Programme widely known as A2I started in 2007 has launched dozens of citizen-oriented e-services where pilots can be quickly

implemented and successful ones scaled up. Khan (2011) discussed that Bangladesh has launched Union Information and Service Center (UISC) in all 4,501 unions across the country to disseminate information and deliver government services to all citizens. The Union Parishad based information centers, equipped with computers and wireless Internet, will offer various online services to people at nominal charge. But still problems and lacking are remaining; even the successful development has been done since last few couple of years. Maisha Sultana Ema Khan (2017) envisioned that shortage of quality teacher, enough healthy environment, emphasis on to memorizes book unwillingly line by line, scared of using electrical devices thinking its damages, lack of confidence students are afraid to talk about their problem to teachers and parents, load of extra books and syllabus, more pressure to the students, intention for coaching, tutors and private are the vital issues for ICT based primary education. (Maisha Sultana Ema Khan from <http://internationalaffairsbd.com/problems-primary-education-system-bangladesh/>)

3. Objective of the Study

The aim of this study is to formulate the major principles of ICT Policy for improving ICT integrated primary education in Bangladesh. The study has the following objectives:

- To find out the major weakness, if any, of ICT integrated quality primary education in Bangladesh;
- To find out the major policy principles to improve the weakness of ICT integrated quality primary education in Bangladesh.

4. Methodology

This study used content analysis in terms of qualitative approach to assess the major weakness of ICT integration for primary education in Bangladesh. Articles were reviewed from relevant documents, academic articles, national & international organizations' reports and government reports mostly related to Bangladesh. For this study about 30 articles were chosen focusing on the ICT policy and ICT integrated primary education. The articles aimed at teacher's training, advanced learning, policy principles, ICT integrated curriculum, compulsory ICT course in primary education, ICT infrastructure developments in primary level, e- learning, and advance learning only were accepted and thereby, the total number articles reduced to 19 articles from 2011 till 2018 have been accepted and reviewed for the study.

5. Data Analysis and Findings

MS- Excel and SPSS were used for the qualitative data analysis. Results of this study are presented in three main sections.

Firstly, it presents results on the content of “General Weakness for ICT Integrated Primary Education in Bangladesh” from 19 articles, chosen for the analysis. Secondly, it presents the “Policy Weakness” and finally, recommendations have been drawn for further developments according to the priority of content analysis.

6. Results and Discussions

The articles chosen for the content analysis were 19. They are given below Table-1.

Table 1
List of Articles

No.	Article/Report/Database	Author/Ed.	Key words	Year
01	Status and role of ICT in educational institute to build Digital Bangladesh	Anupam kumarBairagi,	Role of ICTs in education	2011
02	Barriers to the introduction of ICT into education in developing countries: the example of Bangladesh.2012	Md. Shahadat Hossain Khan,	Problems of ICT in primary education	2012
03	A Study on Implementation of ‘ICT in Education Training’ in Government Primary Schools in Bangladesh	Md. ZahurulHaque,	ICT in education	2017
04	ICT integration in Secondary Education in Bangladesh	M. M. Imran Iqbal Imon	ICT integration & policy	2017
05	ICT Used in Education Sector Considering Primary and Secondary Level Schools in Rural Areas.	Md.MahboborRahman&Naznine Akter	ICT in rural primary school	2017
06	ICT in Education of Bangladesh	A2i, BD	ICT in Edu.	2014
07	Bangladesh Education Statistics’2015	BANBEIS	ICT scenario.	2016
08	Bangladesh Education Sector Snapshot’ 2013	Shahidur Rahman Kazi	ICT status in Bangladesh	2014
09	Towards a National Policy on Open Educational Resources in Bangladesh’2017	Commonwealth of Learning	ICT policy and education	2017
10	Report of Directorate of Primary Education of Bangladesh’2017	DPE	ICT activities in education	2017
11	Education status of Bangladesh in community with the national education policy	Manik Kumar Saha	ICT in Natl edu. policy.	2015
12	Reforming the Education System in Bangladesh: Reckoning a Knowledge-based Society	Md. Nasir Uddin Khan,	Reforming education through ICT	2014
13	The Bangladeshi education system described and compared with the Dutch system	EP-NUFFIC	Education system of Bangladesh	2012
14	Integration of ICT in education sector for the advancement the developing country: Bangladesh Perspective	Mst. Shahnaj Parvin	Integration of ICT in education	2013



No.	Article/Report/Database	Author/Ed.	Key words	Year
01	Status and role of ICT in educational institute to build Digital Bangladesh	Anupam kumarBairagi,	Role of ICTs in education	2011
15	A Statistical Case Study of using ICT in Educational Sector in Rural Context of Bangladesh	Most. TajmaryMahfuz	ICT in edu. sector.	2015
16	Pre-primary Education and the School Learning Improvement Plan, Bangladesh	Ellie Meleisea	Pre-primary edu. & ICT	2015
17	Report: Bangladesh Rural Advancement Committee (BRAC) Primary Schools	USAID	ICT and education for all	2012
18	Bangladesh Education Sector Review Seeding Fertile Ground: Education That Works for Bangladesh	World Bank	Online education	2013
19	Ambiguity in understanding among teachers and students render creative method ineffectiveness—a study on primary school in Bangladesh	Sheikh Nahid Neazy	Quality education through ICT	2016

Firstly, among the 19 article's, general findings have been categorized and tabulated in alphabetic manner (A-P) in order to easy analysis which is shown below Table-2.

Table 2
Analysis of General Facts

Paper	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	%	Year
01	√	√	×	√	×	√	√	√	×	×	×	√	×	×	√	√	56	2011
02	√	√	√	√	√	√	√	√	×	×	×	×	×	×	×	√	56	2012
03	×	√	×	√	×	×	√	√	√	×	×	√	×	√	√	×	50	2017
04	√	√	×	×	√	×	√	×	×	√	×	√	×	√	×	√	50	2017
05	√	×	√	×	√	√	×	√	×	×	√	√	×	×	×	√	50	2017
06	×	√	×	√	×	×	√	×	√	√	×	×	√	√	√	√	56	2014
07	×	√	√	√	×	×	√	×	×	×	√	×	×	×	×	√	37	2016
08	√	√	√	√	√	√	√	√	√	×	√	×	×	√	√	√	81	2014
09	√	√	√	√	√	√	√	√	×	√	√	√	×	×	√	√	81	2017
10	√	√	×	√	√	√	√	√	√	√	√	√	√	√	×	√	88	2017
11	√	√	√	√	√	√	√	√	√	√	√	√	√	√	×	×	88	2015
12	√	√	√	×	√	√	√	√	×	√	√	√	√	√	×	√	81	2014
13	×	√	×	√	×	√	√	×	√	√	×	√	√	×	√	√	63	2012
14	√	√	√	×	√	√	√	√	×	√	√	√	√	√	×	√	81	2013
15	√	√	√	√	√	×	√	√	√	√	√	√	×	√	√	√	88	2015



Paper	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	%	Year
16	√	√	√	×	√	√	√	√	√	√	√	√	√	√	×	√	88	2015
17	√	√	√	√	√	√	√	√	×	√	√	√	√	√	×	√	88	2012
18	√	√	×	√	√	√	×	√	√	√	√	√	×	√	√	√	81	2013
19	√	√	√	×	√	√	√	√	×	√	√	√	√	√	×	√	81	2016
Total	15	18	13	13	14	14	17	15	09	13	13	15	09	13	08	17		
%	79	95	68	68	74	74	89	79	47	68	68	79	47	68	42	89		

From the above table, it has been found that among the 19 articles 95%, 89%, 79%, 74%, 68%, 47% & 42% research mentioned the major weakness which has been categorized in 16 different issues such as lack of ICT infrastructure, lack of electricity, internet, digital devices, unsatisfactory level of using ICT, lack of motivation, insufficient fund, digital content, supervision & leadership and others weakness subsequently.

According to the above Table analysis, general facts has been reorganized on the basis of frequency mentioned in the respective articles and has been presented in below Table 3.

Table 3
Prioritize the General Facts

No	Before Prioritizing	Factors	After Prioritizing	No. of Articles	%	Year
01	B	Lack of ICT Infrastructure	A	18	95	2011-17
02	P	Lack of Devices	B	17	89	2011-17
03	G	Lack of Electricity, Internet and Devices	C	17	89	2011-17
04	A	Unsatisfactory level of using ICT	D	15	79	2012-17
05	H	Lack of the Training in Teaching Learning Activities	E	15	79	2011-17
06	L	Expensive Computer Training	F	15	79	2012-17
07	E	Teachers' Attitudes and Beliefs on ICT(Motivation)	G	14	74	2012-17
08	F	Lack of Knowledge and Skill	H	14	74	2011-17
09	C	Insufficient Fund	I	13	68	2012-17
10	D	Lack of digital Content & Class room	J	13	68	2011-17
11	J	Lack of Supervision and Leadership	K	13	68	12-15,17
12	K	Lack of IT teacher & Time Constraint	L	13	68	2012-17

No	Before Prioritizing	Factors	After Prioritizing	No. of Articles	%	Year
13	N	Lack of integration of DRR & CCA	M	13	68	2012-17
14	I	Lack of Co-operation in using ICT Equipment	N	09	47	2012-17
15	M	Public Private Partnership	O	09	47	2012-17
16	O	Lack of Students' Performance Management System	P	08	42	2011-17

From the above table, data has been analyzed where 95% research found that Lack of ICT Infrastructure is the major problem for ICT integration (general) in Primary Education in Bangladesh. Besides that, 89%, 79%, 74%, 68%, 47% and 42% research shown 16 major problems subsequently which is also mentioned in below figure.

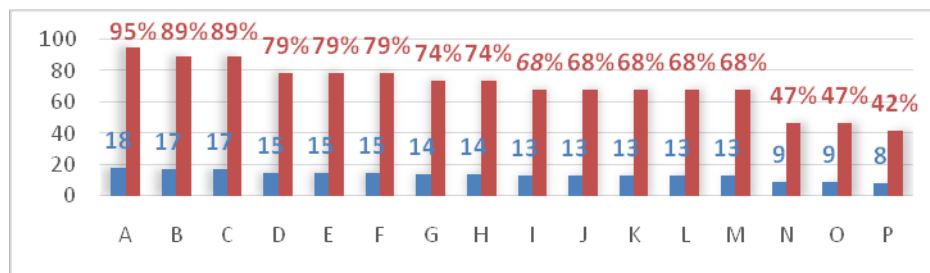


Fig. 1 General Problems Priorities

From the above Figure, it is shown that among 19 research, 95% (18) paper mentioned as lack of ICT infrastructure as a major problem where as 89% (17) paper mentioned lack of devices and lack of electricity, internet and devices as second major problem. 15 research paper (79%) shown unsatisfactory level of using ICT, lack of the training in teaching learning activities and expensive computer training as third major problems for ICT integrated primary education in Bangladesh where the others problem being mentioned as 74% (14), 68% (13), 47% (9) and lastly 42% (8) research found lack of students' performance management system (SPMS) as a problem. Here more than 50% article's mentioned problem has been considered as major 12 problems (1-12).

Secondly, after reviewing the 19 research papers, regarding the issue there are 12 policy factors has been found (A-L) as a policy factors for ICT integration in primary education of Bangladesh which has been analyzed in below Table-4.

Table 4
Analysis of Policy Facts



Paper	A	B	C	D	E	F	G	H	I	J	K	L	%	Year
01	√	√	√	×	√	√	√	×	√	√	√	√	83	2011
02	√	√	√	√	√	√	√	√	√	×	√	×	83	2012
03	×	√	√	√	√	√	√	√	×	√	√	√	83	2017
04	√	√	√	×	√	√	√	×	√	×	√	√	75	2017
05	√	√	√	√	×	√	√	√	√	√	√	√	92	2017
06	√	×	√	√	√	√	√	×	√	√	√	×	75	2014
07	√	√	√	√	×	√	√	√	×	√	√	√	83	2016
08	√	√	√	√	√	√	√	√	√	×	√	√	92	2014
09	√	√	√	√	√	√	√	×	√	√	√	√	92	2017
10	√	√	√	√	×	√	√	√	√	√	×	√	83	2017
11	×	√	√	√	√	√	√	×	×	√	√	√	75	2015
12	√	√	√	√	√	√	√	√	√	×	√	×	83	2014
13	√	√	√	√	×	√	√	√	√	√	√	√	92	2012
14	√	√	×	√	√	√	√	×	√	√	√	√	83	2013
15	√	×	√	√	√	√	√	√	√	×	×	√	75	2015
16	√	√	√	√	√	√	×	×	√	√	√	√	83	2015
17	√	√	√	√	×	√	√	√	×	√	√	×	75	2012
18	√	√	√	√	√	×	√	×	√	√	√	√	83	2013
19	×	√	√	√	√	√	√	√	√	×	√	√	83	2016
Total	16	17	18	17	14	18	18	11	15	13	17	15		
%	84	89	95	89	74	95	95	58	79	68	89	79		

From the above analysis, it has been found that among the 19 articles, total 12 policy issues have been recognized by the researchers where majority of researchers taken the same issues mentioned as 92%, 83% and 75% as commonly agreed. The major policy weakness categorized in below Table-5.

Table 5
Policy Facts by Number & Alphabets

No.	Before Prioritizing	Factors	After Prioritizing	No. of Article	%	Year
01	G	Lack of indication of present education policy about the accountability of English medium school.	A	18	95	2011-17
02	F	Guidebook oriented learning & teaching	B	18	95	2011-17
03	C	Corruption & coaching business	C	18	95	2011-17
04	B	Lack of School Vision and plan	D	17	89	2012-17
05	D	Lack of Policy & Management	E	17	89	2012-17
06	E	Lack of Supplementary Teaching Learning Material Based on the National Curriculum	F	17	89	2011-17
07	K	Discrimination of ICT between Urban & Rural school.	G	17	89	2012-17
08	A	Lack of Government vision and plan	H	16	84	2012-17
09	I	Lack of decentralization of policies	I	15	79	2012-17
10	L	Community based action plan for poor children	J	15	79	2011-17
11	J	Lack of national qualifications framework & quality assurance and accreditation	K	13	68	2012-17
12	H	Lack of efficient recruitment policy	L	11	58	2011-17

From the above analysis among the 19 selected articles 95% researchers found Lack of School Vision and plan, Corruption & coaching business, Lack of indication of present education policy about the accountability of English medium school as major problems in policy issues for ICT integration in Primary education of Bangladesh. Related other issues are 89%, 84%, 79%, 68% and 58% like as corruption & coaching based learning, guidebook oriented learning & teaching, lack of indication of present education policy about the accountability of English medium school and lack of school vision and plan, lack of policy & management, lack of decentralization of policies, lack of Community based action plan for poor children and Lack of efficient recruitment policy among the 12 different issues it has found subsequently which is being mentioned in below Figure-2.

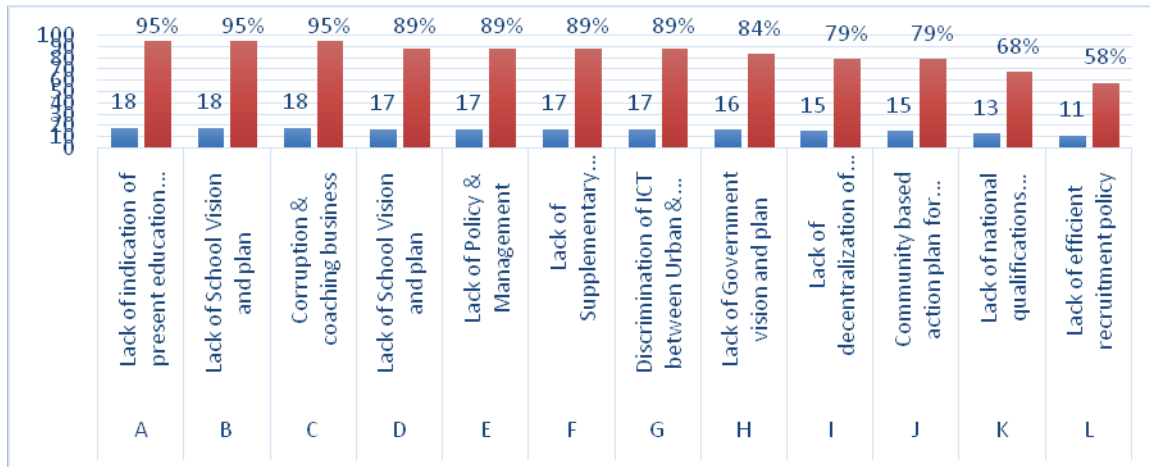


Fig.2 Policy Problems Priorities

From the above figure it shown that among 19 researches, 95% (18) papers found School Vision and plan, Corruption & coaching business, Lack of indication of present education policy about the accountability of English medium school as a major problem for ICT integrated primary education in Bangladesh. Here, all papers shown the results (12 issues more than 50%) can be considered as major policy problem like as A-L.

7. Conclusion

World is changing in every moment by the blessing of technology. To enhance the technology, the exploitation of ICT education is compulsory. In this context, this study revealed the present situation of ICT education in rural Bangladesh. If proper steps are taken to promote the proper use of ICT education in Bangladesh it will be the unique tools to build up “Digital Bangladesh” and “Vision 2021”. The inequity of education among the rural and urban students can be best addressed though the policy of focusing on targeted skills building, concentrating on foundational skills. Therefore, a government policy is required to promote training for the students and teachers to implement the proper ICT based primary education over the country. Government may not be the best providers of training for the stakeholders; they have an important role to play as facilitators (World Bank 2013). Instead of delivering training themselves, the government could focus on creating an environment to support non-public providers by performing the roles of: establishing a policy framework (regulations and incentives), supporting curriculum development, training of trainers, stimulating investment in training through the revision of acts and provision of grants to prospective trainees. It is being important for Bangladesh to begin



systematically monitoring progress too. It is also important for educational institutions to organize career guidance for students, to improve their academic performance and job placement in future.

A higher-quality education system is essential, especially at the lower levels, to focus on ICT integration. Lastly, the recommendations have been divided in two sections as general and policy recommendations towards benchmarking and monitoring the integration of and access to ICT in education, which are fundamental for policymakers to select priorities and adopt and develop effective policies.

8. General Recommendations

According to the findings of the research as well as the lessons of developments the below general issues have been recommended for further research & development.

- a. Development of Physical Environment for Implementation.
- b. ICT Infrastructure development in rural & urban areas school.
- c. Digital content development for any time anywhere access by the involvement of teachers and ICT experts.
- d. Reshuffling of present curriculum integrated with ICT as a unique curriculum.
- e. Ensure digital devices and support equipment's throughout better maintenance.
- f. Ensure electricity and sufficient bandwidth in rural areas schools as well.
- g. Ensure sufficient budget for ICT integration and maintenance.
- h. In service and free service ICT training program for the teachers and students.
- i. Affordable ICT & computer training for all area's students.
- j. Development of teachers, students even parent's motivation with global knowledge sharing and them interest in ICT's.
- k. Ensure cooperation in using ICT equipment among the teachers and IT experts.

Develop Students' Performance Management System (SPMS).

8.1 Policy Recommendations

According to the findings of the research as well as the lessons of developments the below policy issues have been recommended for further research & development:



- A. Specific indication in policy for national qualifications framework and uniform the present curriculum with national capacity and/or infrastructure levels (e.g. electricity, Internet, by type) to permit the integration of ICT tools in more schools that may ensure the nationwide quality education.
- B. Development of system network such as School Education Management Information Systems for schools, teachers, students, school managers and the community including content and resources.
- C. Indication on school vision & plan for quality education and to improve teacher quality with training, motivation & strong monitoring regarding their commitment, online resources and attitude all favor of all rights reserved policies.
- D. Direct policy indication in order to more accountability and transparency for English medium school and kinder garden.
- E. Zero tolerance policy indication about corruption and coaching business that will improve and ensure the quality education.
- F. Decentralize & efficient policy formulation for equal facility as well as ICT accessibility in urban and rural area's school.
- G. Indication on Community based action plan for poor children in order to terminate the discrimination between urban and rural areas students as well as rich and poor family equal access.
- H. Policy indication about guidebook-oriented learning & teaching and adequate bandwidth for hardware & software to meet data standards and online education resources as well as digital resources.
- I. Short-term strategies for physical resources-devices to make more interest of both students & teachers and affordable computer training for the teachers to develop their skill in order to provide quality teaching and real time learning.
- J. Indication in policy for IT teacher recruitment in every school and policy for their skill development.
- K. Policy for establishing science lab & computer lab in every school to explain the logical facts in practical session and making them more interest in learning.
- L. Policy indication for dignifying leadership and strong monitoring to implement ICT's as a priority basis
- M. Policy for parental involvement as 'Carrier fit' system and global symposium portal targeting to build knowledge-based society.



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