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Towards a National Policy on Open Educational Resources in Bangladesh

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Abbreviations

a2i	Access to Information
ARBAN	Activity for Reformation of Basic Needs
BANBEIS	Bangladesh Bureau of Educational Information and Statistics
BCC	Bangladesh Computer Council
BDT	Bangladesh Taka
BMTTI	Bangladesh Madrasah Teacher Training Institute
BNNRC	Bangladesh NGOs Network for Radio and Communication
BOU	Bangladesh Open University
CAL	Computer-Aided Learning
CD	Compact Disk
COL	Commonwealth of Learning
CRC	Community Reading Centre
DAM	Dhaka Ahsania Mission
DME	Directorate of Madrasah Education
DPE	Directorate of Primary Education
DPP	Development Project Proforma
DSHE	Directorate of Secondary and Higher Education
DTE	Directorate of Technical Education
EFA	Education For All
EIA	English in Action
GoB	Government of Bangladesh
GP	Grameenphone
HSC	Higher Secondary Certificate
HSTTI	Higher Secondary Teacher Training Institute
ICT	Information and Communication Technology
ICTE	Information and Communication Technology in Education
MDG	Millennium Development Goal
MoE	Ministry of Education
MoPME	Ministry of Primary and Mass Education
NACTAR	National Academy of Computer Training and Research
NAEM	National Academy for Educational Management
NAPE	National Academy for Primary Education
NCTB	National Curriculum and Textbook Board
NGO	Non-Governmental Organisation
OA	Open Access
ODL	Open Distance Learning
OECD	Organisation for Economic Co-operation and Development
OER	Open Educational Resources
OSP	Online School Programme
PC	Personal Computer
PEDP	Primary Education Development Plan
PMO	Prime Minister's Office
PTI	Primary Teacher Training Institute
SC	Save the Children
SSC	Secondary School Certificate
TTC	Teachers' Training College
TTTC	Technical Teachers' Training College
UGC	University Grants Commission
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
VTI	Vocational Training Institute
VTTI	Vocational Teachers' Training Institute

Executive Summary

Bangladesh is an E9 country with a huge population and a corresponding demand for quality education. Its challenges are common to those of other developing nations. Whilst the government provides free textbooks at the primary and secondary level, access to higher education is limited. This report has been prepared to support the adoption of a national open educational resources (OER) policy in Bangladesh. OER are teaching, learning and research materials that are either available in the public domain or released with an open licence that allows reuse, revision, remixing and redistribution without the permission of the copyright holder. The use and integration of OER in teaching and learning not only saves money for learners, but also empowers teachers to create learning resources that are suitable for their learners in specific contexts by reusing already available materials. Hence, OER adoption offers huge possibilities for transforming teaching and learning environments. This study reviews the existing policies in Bangladesh and analyses the present situation with regard to access to and use of educational resources by learners, to justify the need for a national OER policy. The report highlights that whilst there have been various efforts to create educational materials for free distribution, and several initiatives to produce digital content at the K-12 level, there is not much happening in terms of providing access to educational content at the higher education level.

The respondents to the study came from 27 universities in Bangladesh, whilst a national consultation was also conducted in November 2016 to discuss the draft OER policy. Major findings of the study include:

- Most students in higher education have a smartphone (95 per cent), and they use mobiles to access the Internet and find learning resources. In addition, 86 per cent of the respondents have access to a laptop, 59 per cent to a desktop computer and 62 per cent to a tablet. So, learners have ICT tools to access educational materials available as OER in digital form.
- Students in Bangladesh use about ten books per year. Whilst they buy about half of these, the rest are used by borrowing from friends and libraries. Most of the books purchased are photocopied versions (Nilkhet prints), as the cost of original prints is too high for students to afford. The use of OER will reduce this dependency on photocopied materials, which also has issues associated with copyright infringement.
- Students are concerned about not purchasing books, as it hurts their academic grades. Thirty-three per cent of the respondents chose their disciplines of study based on the cost of textbooks, whilst 31.5 per cent were somewhat concerned about the cost of textbooks when choosing their disciplines. Having access to OER will help learners choose their ideal subjects and follow their interests and passions.
- Student spend on average BDT 1,850 per year, which is over 258 million BDT per year when we consider the number of students in college and university. This is money that could be utilised by students in different ways if OER were adopted systematically in Bangladesh.

The study and the consultation process led to the development of a draft national OER policy for implementation in Bangladesh. As Bangladesh has a mature and highly developed ICT in education (ICTE) system that is spearheaded by the Government's plan for Digital Bangladesh by 2021, adoption of an OER policy by government ministries and agencies would strengthen the existing infrastructure and help Bangladesh emerge as a knowledge contributor rather than a knowledge consumer. The use of OER will bring cost savings to students and will improve students' learning outcomes and aspirations to study specific disciplines of their choice. It will also improve their and teachers' understanding of copyright and the use of openly licensed

materials. In addition, the use of openly licensed materials in teaching and learning will foster an environment of sharing, collaboration and co-creation, leading to a transformation of the country's educational landscape. Teachers will create new learning materials on the basis of available OER and improve learning in context.

Considering the key findings of the study and the national consultation, the report makes the following recommendations to ensure easy and free access to quality learning resources:

- All educational resources created using public funds should be released under an open licence, and an appropriate policy should be adopted at the national level to guide educational institutions and other national agencies developing learning materials.
- The awareness and capacity of teachers and students should be increased regarding the use of OER in their teaching and learning.
- Institutions should create OER repositories to give teachers and learners better access to open resources.

In addition, to make OER programmes in Bangladesh more successful, the report proposes the following action plan:

- The proposed OER policy should be adopted as soon as possible at the national level.
- Existing national portals for educational materials, such as the Shikkhok Batayon and Muktopaath, should be released as OER. In addition, all other portals for sharing educational materials should be made OER compliant by adopting specific licences suitable for the site.
- A scheme for a national OER content development programme in higher education should be announced, starting with piloting in some key subject areas.
- All content developed for primary and secondary levels should be made available as OER as a result of the adopted OER policy.
- A nation-wide programme of OER capacity building should be initiated to help more teachers adopt and share educational materials with open licences.
- The agencies involved in ICT in education and content development need to develop better co-ordination mechanisms amongst themselves to avoid duplicating their efforts.

CHAPTER 1: Introduction

1.1. Background

Bangladesh is the eighth most populous country in the world. Officially known as the People's Republic of Bangladesh, the country is located in the Bay of Bengal and shares borders with India and Myanmar. It is a primarily Bengali-speaking and Muslim-majority country, and the literacy rate in 2014 was estimated to be 66.5 per cent for males and 63.1 per cent for females. The vast majority of the population remain outside the orbit of higher education because of insufficient infrastructure, limited access to relevant educational resources, lack of affordability and other factors. As per Part III, Section 17, Article (b) of the Constitution of Bangladesh, it is mandatory to relate education to the needs of society so as to produce properly trained, motivated citizens to serve those needs. The recently adopted Sustainable Development Goal 4 (SDG4) strives to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” by 2030. Bangladesh has made ensuring scalable, inclusive, quality education a top priority, as it is striving to achieve middle-income status by 2030 and upper-middle-income status by 2021 (Planning Commission, 2012). Almost 54 per cent of the population of Bangladesh is under the age of 24, which helps the country to benefit from demographic dividends. However, Bangladesh faces the challenge of ensuring that all of this young population receives quality education. One of the main hurdles is the limited availability of quality educational resources and limited access to them. Keeping these factors in mind, the Commonwealth of Learning (COL) initiated this study within the framework of its Strategic Plan (2015–2021) to promote the use of open educational resources (OER) in Bangladesh. It undertook an analysis of the status of access to educational materials in Bangladesh (particularly in higher education). A national consultation was also conducted in collaboration with the a2i (Access to Information) Programme of the Prime Minister's Office, Bangladesh Open University, the Bangladesh Ministry of Education and other key stakeholders responsible for developing educational content using public funding. Further, it identified the key projects/initiatives and institutions engaged with content development and sharing/distribution in Bangladesh. This report recommends steps for the Ministry of Education and other stakeholders to adopt a national policy on OER to facilitate improved access to quality learning materials and educational opportunities for millions and foster lifelong learning.

1.2. Defining OER

OER are educational materials that are offered freely and are available to anyone under certain open licences, allowing others to reuse, adapt and redistribute them with few or no restrictions.

According to the Hewlett Foundation, OER can be seen as a subset of a broader term, open education, which “is the simple and powerful idea that the world's knowledge is a public good and that technology in general and the World Wide Web in particular provide an extraordinary opportunity for everyone to share, use, and reuse knowledge” (cited in Butcher & Moore, 2015, p. 8). The Foundation defines OER as “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others” (cited in Butcher & Moore, 2015, p. 6).

However, the term open educational resources was first used by UNESCO at its “Forum on the Impact of Open Courseware for Higher Education in Developing Countries” in 2002, where OER was defined as: “The open provision of educational resources, enabled by information and

communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes” (UNESCO, 2002).

Further Atkins, Brown and Hammond (2007) (cited in UNESCO & COL, 2015, p. v) clarified that “OER are teaching, learning and research materials in any medium that reside in the public domain and have been released under an open licence that permits access, use, repurposing, reuse and redistribution by others with no or limited restrictions ... OER can include full courses/programmes, course materials, modules, student guides, teaching notes, textbooks, research articles, videos, assessment tools and instruments, interactive materials such as simulations and role plays, databases, software, apps (including mobile apps) and any other educationally useful materials” (UNESCO & COL, 2015, p. v). It may be noted that OER is not synonymous with online learning, eLearning or mobile learning. However, OER as a term is largely synonymous with open courseware (OCW).

OER are an important component of making open education possible for all learners, teachers and researchers. OER are:

- available free of charge to learners, teachers, researchers and others;
- digital, printable and easily accessible through the Internet globally;
- adaptable, allowing others to reuse and repurpose them for reproduction; and
- materials that do not require the permission of the copyright holder to reuse or redistribute them.

Thus, the concept of OER refers to teaching and learning materials that are available either in the public domain (materials whose copyright has expired or whose authors have relinquished copyright) or under an open licence. It is also important to note that licensing is a concept within copyright law, and an open licence can allow the adoption/adaptation of a work under different circumstances.

Keeping in mind the large number of stakeholders within the education sector, Hodgkinson-Williams (2010) has argued that the potential benefits of open education and OER extend beyond educators and materials developers (see Table 1).

1.3. Methodology

In order to prepare the report, the study consulted several published government sources, conducted a comprehensive survey covering 27 universities in Bangladesh and conducted a national consultation with relevant stakeholders to develop a policy framework. The list of participants in the national consultation is in Annex 1.

1.4. Organisation of the Report

The report is organised to give an overview of the status of ICT in education in Bangladesh and the problems learners face when trying to access educational materials. It also provides information on specific projects and initiatives that enable access to quality educational materials and that could be released as OER, as long as appropriate steps were taken. In addition, it recommends a draft policy that could be adopted by the Government of Bangladesh to foster the use and integration of OER in teaching learning at all levels and improve the quality of learning outcomes.

Table 1. Potential Benefits of OER

Perspective	Potential Benefits
Government Perspective	Advancing knowledge by unlocking information for the benefit of all
	Widening participation in higher education by expanding access for non-traditional learners
	Promoting lifelong learning
	Bridging the gap between formal, informal and non-formal
	Leveraging taxpayers' money by sharing and reuse between institutions
Institutional Perspective	Sharing knowledge is congruent with the academic tradition
	The public image of the institution may be enhanced and new students attracted
	Improving recruitment by helping the right students find the right programmes
	Providing a resource for students and faculty that supports learning and collaboration
Educator's Perspective	Attracting alumni as lifelong learners
	Personal gain through increased reputation
	Gaining publicity or reaching the market more quickly may result in an economic advantage
	Fostering connections with colleagues around the world
Learner's Perspective	Preserving a record of teaching innovations, allowing others to build upon them
	Leaving a legacy after exiting academia
	An independent learner who has access to the Internet can access material from the best universities in the world
	OER can promote informal learning, wherein credentials are not needed
	Prospective students may access institutions by looking at their materials made available by other institutions

Source: Hodgkinson-Williams, 2010

CHAPTER 2: The Education System in Bangladesh

2.1. Overview of the Education System in Bangladesh

The education system of Bangladesh is large, catering to over 37 million students, with public and private providers working collaboratively (BANBEIS, 2015). In general, the education system has three major stages: primary, secondary and higher education. The National Education Policy 2010 recommends that primary education comprise a nine-year cycle (Grades 1–8; presently, it is 1–5), including one year of pre-primary education, but this is not implemented widely in Bangladesh at the national level. Secondary education spans four years (Grades 9–12) with two sub-cycles: two years of secondary and two years of higher secondary. The entry age for pre-primary education is five years and for primary six. The secondary and higher secondary stages are designed for age groups 14–15 and 16–17. Higher secondary is followed by higher education; in general, technical and medical streams require five to six years to obtain a master’s degree (MoE, 2010; Rahman, Hamzah, Meerah, & Rahman, 2010). Figure 1 shows the different stages and types of education system in Bangladesh.

Age	Grade											
26+												
25+	XX											
24+	XIX			Ph. D	PostMBBS Dipl	Ph. D(Engr)	Ph.D(Medical)			Ph. D (Education)		
23+	XVIII		M.Phil	M.Phil(Medical)								
22+	XVII	MA/MSc/MCom/MSS/MBA	LLM	M B S BDS	MSc(Engr)	MSc.(Agr)		M B A	M.Ed & M A(Edn)		MA(LSc)	
21+	XVI	Bachelor (Hons)	Masters (Prel)	LLB(Hons)	BSc.Eng BSc.Agr BSc.Text BSc.Leath	BSc.Eng (Tech.Edn)	B B A	B. Ed & Dip.Ed	BP ED	Dip.(LSc)	Kami	
20+	XV		Bachelor (Pass)									
19+	XIV											
18+	XIII											Fazil
17+	XII	Secondary	Examination		HSC			HSC Vocational	C in Edu.	C in Agri	Diploma in Comm	Alim
16+	XI		HIGHER SECONDARY EDUCATION									
15+	X		Examination	SSC	TRADE Certificate/ SSC Vocational	ARTISAN COURSE e.g. CERAMICS						Dakhil
14+	IX		SECONDARY EDUCATION									
13+	VIII	JUNIOR SECONDARY EDUCATION										
12+	VII											
11+	VI											
10+	V	PRIMARY EDUCATION										
9+	IV											
8+	III											
7+	II											
6+	I											
5+		PRE-PRIMARY EDUCATION										
4+												
3+												

Figure 1. The education system of Bangladesh (from BANBEIS, 2015)

2.1.1. Diversification

“The education system of Bangladesh is comprised of a mix of heterogeneous providers. A variety of schools operate within the country; government run schools, privately run schools and madrasah, English medium schools, schools run by NGOs and kindergarten schools” (BANBEIS, 2015, p. 17). Table 2 shows the number of different educational institutions, from primary to higher education.

Table 2. Number of Institution, Students and Teachers by Type of Education, 2015

Type of Education	Management	No. of Institutions	No. of Teachers			No. of Students			Indicators		
			Total	Female	% of Female	Total	Girls	% of Girls	TSR	SPI	TPI
Primary Education	Public	63,546	322,487	199,297	62	13,793,653	7,128,053	52	43	217	5
	Private	58,630	205,311	115,002	56	5,274,108	2,570,629	49	26	90	3.5
	Total	122,176	527,798	314,299	60	19,067,761	9,698,682	51	36	156	4
School Education	Public	804	8,177	2,593	32	335,320	165,152	49	41	417	10
	Private	19,493	234,940	59,108	25	9,407,752	5,028,810	53	40	483	12
	Total	20,297	243,117	61,701	26	9,743,072	5,193,962	53	40	480	12
College Education	Public	302	12,926	3,512	27	1,356,962	581,298	43	105	4,493	43
	Private	3,811	98,686	22,291	23	2,321,907	1,127,873	49	24	609	26
	Total	4,113	111,612	25,803	23	3,678,869	1,709,171	46	33	894	27
Madrasah Education	Public	3	75	0	0	6,289	370	6	84	2,096	25
	Private	9,316	113,958	14,450	13	2,403,084	1,290,912	54	21	258	12
	Total	9,319	114,033	14,450	13	2,409,373	1,291,282	54	21	259	12
Professional Education	Public	111	3,961	890	22	31,867	13,789	43	8	287	36
	Private	369	4,281	667	16	90,962	34,201	38	21	247	12
	Total	480	8,242	1,557	19	122,829	47,990	39	15	256	17
Teacher Education	Public	83	1,205	320	27	19,230	6,415	33	16	232	15
	Private	132	1,474	238	16	15,504	5,351	35	11	117	11
	Total	215	2,679	558	21	34,734	11,766	34	13	162	12
Technical-Vocational	Public	252	4,957	687	14	178,085	29,674	17	36	707	20
	Private	5,538	25,946	5,557	21	694,573	179,200	26	27	125	5
	Total	5,790	30,903	6,244	20	872,658	208,874	24	28	150	5
University	Public	37	12,414	2,721	22	493,110	181,450	37	40	1,3327	336
	Private	85	13,905	3,983	29	379,781	105,275	28	27	4,468	164
	Total	122	26,319	6,704	25	872,891	286,725	33	33	7,155	216
Total (Post-primary)	Public	1,592	43,715	10,723	25	2,420,863	978,148	40	55	1521	27
	Private	38,744	493,225	106,294	22	15,313,383	7,771,622	51	31	395	13
	Total	40,336	536,905	117,017	22	17,734,246	8,749,770	49	33	440	14
Country (Primary + Post-primary)	Public	65,138	366,202	210,020	57	16,214,516	8,106,201	50	44	249	6
	Private	97,374	698,501	221,296	32	20,587,671	10,342,251	50	29	213	7
	Total	162,512	1,064,703	431,316	41	36,802,187	18,448,452	50	34	228	7

TSR = teacher–student ratio, SPI = students per institution, TPI = teachers per institution

2.1.2. General Education

The primary education system of Bangladesh is very large, catering to 19.067 million students through 28 types of providers, with the government primary schools alone covering 75 per cent of students. The 20,297 secondary schools cater to 9.74 million students, amongst whom 53 per cent are girls. The institutions offering post-higher secondary education are included in the category of college and university education. The following types of colleges are recognised: intermediate colleges, degree colleges, honours colleges and master's colleges. These colleges — except for intermediate ones — are under the management of the National University. Intermediate colleges are academically managed by the related education boards of certain catchment areas. There are 4,113 different colleges, the majority of which (92.66 per cent) are privately managed, the remaining 7.34 per cent being government managed. In addition to this, there are 122 universities in Bangladesh, 37 (30 per cent) public and 85 (70 per cent) private. Altogether 872,891 students study in these universities (BANBEIS, 2015).

2.1.3. Madrasah/Religious Education

Madrasah education, a large subsector of the education system of Bangladesh, caters to over 3.78 million students and is continuously growing. This is quite distinct from the general education stream and is popularly known as the religious stream. Compared to general education institutions, *ebtedayee* madrasahs offer primary equivalents, whilst post-primary madrasahs cover *dhakhil*, *alim*, *fazil* and *kamil*, which are equivalent to secondary, higher secondary, degree and master's education in the general stream. This sector is mostly privately managed, with only three government madrasahs out of 9,319 (BANBEIS, 2015).

2.1.4. Professional Education

Professional education develops a skilled workforce and is a large sector of Bangladesh's education system. There are 476 professional institutions in the country, comprising 11 types of institutions: medical colleges, dental colleges, nursing colleges, homeopathic colleges, Unani/Ayurvedic nursing institutes, health technology institutes, and colleges of textile technology, leather technology, law and art. The total number of students in these institutions at the time of writing was 122,829, and the number of students is continually increasing (BANBEIS, 2015).

2.1.5. Teacher Education

In order to prepare teachers and provide them with professional development support, the country has seven types of educational institutions in this sub-sector: primary teacher training institutes (PTI), teachers' training colleges (TTC), technical teachers' training colleges (TTTC), vocational teachers' training institutes (VTTI), physical education colleges, higher secondary teacher training institutes (HSTTI) and Bangladesh madrasah teacher training institutes (BMTTI). Amongst the 215 institutions, 38 per cent are government managed and 62 per cent are privately managed (BANBEIS, 2015).

2.1.6. Technical and Vocational Education

This sub-sector caters to more than 872,658 students through 14 types of providers. Different institutions include: polytechnics, technical schools and colleges, glass and ceramic institutes, graphic arts institutes, surveying institutes, TTC textile institutes, textile vocational institutes, agricultural training institutes, marine technology institutes, SSC vocational institutes

(independent), HSC vocational institutes (independent), HSC vocational institutes (attached) and HSC business management institutes (BANBEIS, 2015).

2.1.7. English-Medium School Education

English-medium education has gained popularity in recent years. There are 162 English-medium schools in the country, of which 38 are O level, 99 are A level and only 25 are primary level. Most of the schools are located in Dhaka city (138), followed by Chittagong (13). Altogether 125,233 students are studying in these English-medium schools (BANBEIS, 2015).

2.2. Responsible Authorities

The entire education system of Bangladesh is managed centrally by the government. The Ministry of Education (MoE) and the Ministry of Primary and Mass Education (MoPME) play the major role in this regard. The MoPME, Directorate of Primary Education (DPE) and Bureau of Non-formal Education are responsible for the planning and management of primary, mass and pre-primary education, whilst the MoE, Directorate of Secondary and Higher Education (DSHE) and Directorate of Technical Education (DTE) are responsible for post-primary education. The MoE and University Grants Commission (UGC) look after the overall management of higher education (BANBEIS, 2015). To look after the madrasah education system, as it is another large sub-sector, the Directorate of Madrasah Education (DME) was established in 2015. Along with these, the Ministry of Social Welfare and Ministry of Women and Children Affairs look after some specialised schools.

In terms of the ownership and management of secondary schools, there are two major types: government secondary schools and non-government secondary schools (including dakhil madrasahs). Nearly 98 per cent of the post-primary (secondary and higher secondary) institutions are owned and managed by the private sector (BANBEIS, 2006). However, the government covers teachers' salaries and wages, educational equipment and supplies, and the costs of physical infrastructure development for these institutions. Therefore, these institutions are private only in name. Secondary education level institutions in the technical and vocational stream include polytechnics, vocational training institutes (VTI), commercial institutes, technical training centres, textile vocational centres, agriculture training institutes and others. Bangladesh Open University (BOU) also provides distance education for dropout students at the secondary education level, with the support of a countrywide network of regional and local centres as well as radio and television programmes. The numbers of secondary level educational institutions (post-primary), teachers and pupils are presented in Table 1 (BANBEIS, 2015).

2.3. Access to Education and Quality Assurance

During the last three decades, Bangladesh has made commendable progress in increasing equitable access to education, reducing dropout rates, improving completion of the education cycle and implementing a number of quality enhancement measures in primary and secondary education. It has already achieved gender parity in primary and secondary school enrolment. The government has shown commitment to ensuring access to education for all by introducing free book distribution in primary and secondary education and a student stipend programme. In addition, to enhance teaching quality, different professional development programmes have been offered through educational development projects of the MoE, MoPME and UGC. However, the persistent challenges include reducing the dropout rate in primary and secondary

education, increasing the adult literacy rate and improving the quality of education (Planning Commission, 2015a, p. 35).

Bangladesh's education system has a satisfactory physical infrastructure on which the government can further work to make the system better. The 2015 Education Survey revealed that 85.38 per cent of all institutions have electricity and 71.9 per cent have multimedia and computer facilities (BANBEIS, 2015). Undoubtedly, the education system of Bangladesh is a very large one to manage and needs systematic co-ordination amongst various stakeholders.

Persistent challenges include reducing the dropout rate in primary and secondary education, increasing the adult literacy rate and improving the quality of education.

CHAPTER 3: ICT in Education — Existing Policies and Master Plan

As part of its development aspirations, the Government of Bangladesh (GoB) established Vision 2021 and came up with various policies and strategies — e.g., the National ICT Policy 2009 and 2015 and the National Education Policy 2010 — to act as catalysts in the country’s movement to become Digital Bangladesh by 2021. In the country’s poverty reduction strategy, called the National Strategy for Accelerated Poverty Reduction (NSAPR) 2009, ICTs were similarly identified and given due importance. The current government’s Digital Bangladesh by 2021 vision proposes to mainstream ICTs as a pro-poor tool to eradicate poverty, establish good governance, ensure social equity through quality education, healthcare and law enforcement for all, and prepare citizens for climate change. This chapter attempts to review the policy perspective required to develop a national OER policy in Bangladesh.

3.1. Digital Bangladesh Vision 2021

Digital Bangladesh is an integral part of the government’s Vision 2021, which promises a prosperous and equitable middle-income Bangladesh by its golden jubilee of independence. This vision arguably runs parallel to the information society vision advocated by the World Summit on the Information Society (WSIS). The Digital Bangladesh by 2021 declaration was made on 12 December 2008 for the 9th Parliamentary Election, held on 29 December 2008 by the present Government of Bangladesh. It is interpreted as a long-term vision rather than a target. Digital Bangladesh Vision 2021 is unique, as it proposes to mainstream ICTs as a pro-poor tool. Indeed, this was probably the first time in the history of Bangladesh that the vision of poverty reduction and human development through leveraging ICTs had been proposed, and it received instant support from common citizens. The Prime Minister outlined the four key priorities of Digital Bangladesh: (a) developing human resources to meet 21st-century needs; (b) connecting citizens in the ways that are most meaningful to them; (c) taking services to citizens’ doorsteps; and (d) making the private sector and market more productive and competitive through the use of digital technology. Indeed, the vision of Digital Bangladesh emerged as the first ever development strategy in the world that deliberately attempts to use ICTs to reduce poverty and transform the fates of the common women and men of Bangladesh. Thus, a number of acts, policies and guidelines are now in place to guide the nation towards the realisation of Digital Bangladesh (see Table 3).

3.2. The ICT in Education Master Plan (2012–2021)

The main objective of the Master Plan is to ensure education for all, to improve the standard of education, to produce a skilled workforce, to reduce discrimination in education standards between urban and rural areas through the use of ICT, and to use information technology effectively in education. Policy makers have indicated that the national ICT in Education Master Plan is to address four basic obstacles: lack of awareness of how ICT can help improve the education sector; lack of technical capacity to develop policies that will effectively integrate ICT into the education system; lack of leadership to implement what has been planned and agreed; and lack of effective co-ordination amongst the different GoB agencies. The ICT in Education Master Plan 2012–2021 identifies seven objectives for ICT in education (MoE, 2013):

- Development of the teaching–learning environment.

- Development of teachers' professional and ICT skills.
- Development of teaching–learning resources.
- Development of human resources to meet present-day demands.
- Ensuring transparency, skills and accountability in education management.
- Bringing education services to the doorsteps of citizens.
- Ensuring the participation of education-related personnel.

This initiative was incorporated into the Perspective Plan, and the first phase of implementation started with the Sixth Five Year Plan 2011–2015 (Planning Commission, 2011). Bangladesh made important strides during the Sixth Plan in utilising technology to bring about tangible transformation in all four areas emphasised by the GoB. Based on the Master Plan, the GoB targeted ICT development in the Seventh Five Year Plan (2016–2020) as follows (Planning Commission, 2015b):

- Allocate one per cent of the GDP for spending on research and development.
- Increase the proportion of primary government schools with a computer laboratory.
- Improve tele density to 100 per cent
- Expand broadband coverage to 35 per cent.
- Increase earnings from ICT, travel and tourism from \$1.5 billion to \$6 billion.

Table 3. Policy Interventions in Bangladesh

a2i Policy Interventions	
<ul style="list-style-type: none"> • ICT Policy 2009 • ICT Act 2010 • Strategic Priority of Digital Bangladesh • Sixth Five Year Plan • Cyber Security Policy 2010 • Public Private Partnership Policy and Guidelines 2010 • Rural Connectivity Policy Guideline 2010 • Broadband Policy • Mobile Keypad Standardisation Policy • National Strategy Paper on m-Governance • Guidelines for Utility Bill Payment • e-Krishi Policy • Health Policy • Education Policy 	<ul style="list-style-type: none"> • National e-Governance Architecture • National Telecom Policy 2010 • Right to Information (RTI) Act • Guidelines on Mobile Financial Services (MFS) for Banks • Secretarial Instructions • Proactive Information Disclosure Guidelines • Indicators for Measuring Digital Bangladesh • Bangladesh Interoperability Guidelines and Standards (BIGS) • Disability Act • Innovation Team Gazette • National Portal Framework (NPF) Management Gazette

3.3. National ICT Policies

Over the last few years, a new understanding of ICT as a development enabler has made its way into the government's various policy documents. The national ICT policy was first introduced in 2002, then was revised in 2009 and is again under revision as ICT Policy 2015. The revised ICT Policy 2009, which was approved by the Cabinet, has specific directions and guidelines reflecting most of the priorities of the Digital Bangladesh agenda.

The Government of Bangladesh has started to look for effective initiatives for grassroots-level education systems. Targeting remote areas in Bangladesh, Bairagi, Rajon and Roy (2011), the GoB has focused on the increasing digital divide, which needs to be addressed via the uniform

and well-administered implementation of ICT. The Bangladesh National Information and Communications Technology (ICT) Policy (2002) outlined a number of measures for the introduction of ICT education in primary, secondary and higher education, including teacher training in ICTs, the deployment of virtual ICT teachers, and web-based teaching–learning materials. The government rephrased the policy in 2009. Some of the specific policy statements relevant to education are as follows (MSICT, 2009):

- Enhance the quality and reach of education at all levels, with a special focus on mathematics, science and English.
- Boost the use of ICT tools at all levels of education, including early childhood development programmes, mass literacy and lifelong learning.
- Initiate diploma and trade courses to enable ICT capacity building for teachers. Teacher training institutes should be empowered with ICT capacity to meet current challenges.
- Promote distance education, and set up institutes and infrastructure for eLearning training programmes.
- Build facilities to promote ICT training and computer-aided training at all levels of education, including primary schools and madrasahs.
- Strengthen universities, institutes of technology and colleges, in both public and private sectors to produce ICT graduates in four-year computer science and/or engineering courses.
- Establish multimedia institutes up to the district level.
- Offer diplomas and trade certificates in ICT in both public and private institutes, including polytechnics.
- Use the potential of ICT to deliver distance education, thereby helping to stretch the country's limited teaching resources and ensure quality education for all.
- Give preference to ICT-literate candidates when recruiting for public offices. ICT literacy shall also be evaluated in the annual confidential report (ACR) on officials to ensure utilisation of ICT in the public service.

To date, some achievements can be noted from the perspective of ICT policy:

- ICT as a compulsory course has been introduced at the secondary and higher secondary levels.
- Almost all public and private universities place particular emphasis on training students in ICT-related fields.
- Different public offices have taken up initiatives to provide ICT training to government officials and staff.
- The Ministry of Science and ICT and its subsidiary, the Bangladesh Computer Council, are playing important roles in training public officials, school teachers and citizens at low cost.
- Private ICT training institutes have sprung up in large numbers over the last few years in major urban centres.
- The Ministry of Science and ICT has introduced an ICT Internship Programme in co-operation with the private sector, to support the development of quality professionals for the ICT industry.

But still, there is obviously a long way to go to achieve the policy targets. From the policy perspective, the following need to be considered:

- Due to the inadequate number of ICT tools in schools at the rural level and the lack of sufficiently trained teachers, most students do not get enough exposure to ICT.

- Not enough jobs are being created to absorb the ICT-trained human resources.
- Much of the government ICT training is isolated and project-based — a co-ordinated national effort to build ICT capacity in the government has yet to be implemented.
- ICT-based education is not a policy priority.
- There is excessive emphasis on computerisation without sufficient consideration of enabling factors, such as teacher training, curriculum modernisation, etc.
- In government recruitment and promotion, ICT skills are still not taken into consideration.

3.4. The ICT in National Education Policy

The National Education Policy 2010 paid particular attention to the integration of ICT into education. This policy clearly recognised that the country needs to develop ICT. Bangladesh needs a competent workforce to meet its internal needs. Moreover, there is a high demand for skilled workers abroad, and this will gradually increase over the coming years. The export of skilled workers could increase Bangladesh's foreign currency earnings. Development programmes will be undertaken to build a competent workforce in light of national and international demands. Thus, the policy identified the objectives of education in relation to ICT in Bangladesh as follows (MoE, 2010):

- to ensure a high standard of skills in the different areas and levels of education so that learners can successfully compete within the global context;
- to attach substantial importance to ICT, along with mathematics, science and English, in order to build up a digital Bangladesh based on knowledge orientation and the cultivation of ICT;
- to extend the use of ICT in education processes at every level; and
- to place the highest importance upon achieving proper competencies in every curriculum; computing and ICT will be included as compulsory subjects in vocational and technical education curricula.

The export of skilled workers could increase Bangladesh's foreign currency earnings.

Moreover, the policy articulated the strategies for ICT in primary, secondary, vocational and technical education, and higher education as follows (MoE, 2010):

- Right from the primary level of education, computers will be used as teaching tools.
- All students will be computer literate before they reach the secondary level.
- Secondary education students are to study computer science along with mathematics and science.
- In vocational and technical education, there must be the scope for learning graphic design, multimedia, animation, CAD/CSM, etc.
- In order to increase interest in information technology, IT Olympiads can be organised at national and international levels.
- Computer science and information technology departments following international standards for their curriculum will be opened in all universities.
- High-quality teaching in computer science and information technology will be provided at the university level and regularly updated, and students will be offered the necessary training to make them workers skilled in IT.

- Opportunities will be created for students of science and other subjects to participate in the national examination system so that they can become IT workers. If necessary, training courses will be arranged for them.
- An Open University will be built as a true digital university enriched by IT facilities.
- A system will be developed so that all graduates will have basic computing skills by 2013.
- An Information Technology University (ITU) will be established to train teachers engaged in teaching IT in higher education and to facilitate research in this field.
- Co-ordinated steps will be taken to expand IT education and computer science at the grassroots level and to establish IT training centres and tele-centres at the district and upazila/thana levels.
- Training will be arranged to develop the computer skills of government and non-government officials and policy makers.
- Computer skills will be treated as an additional qualification for recruitment in third-class or higher positions in government and non-government institutions.

Multimedia classrooms and digital teaching aids made by teachers were initiated on 20 May 2012 through the a2i programme. Under the auspices of a similar project, almost all government schools in seven divisions outside Dhaka now have multimedia projectors and computers. Starting from 2001, the Ministry of Science and ICT, in co-operation with the Directorate of Secondary Education and the Directorate of Vocational Education, are developing eLearning programmes. The objective of these programmes is to improve the quality of education at the high school and vocational school levels through the use of the Internet.

3.5. ICT Initiatives in Education

Several different kinds of agencies are working to integrate ICT in education and thereby achieve quality education throughout the country: government agencies, non-governmental organisations, corporate bodies and financial institutions. Table 4 shows the major government agencies working toward ICT integration in education in Bangladesh.

Table 4. Major Government Agencies Involved in ICT in Education

SI No.	Agency	Website
1	Prime Minister's Office	
	1.1 a2i (A project of UNDP but operated by the PMO)	www.a2i.pmo.gov.bd
2	Ministry of Post Telecommunication & Information Technology (MoPT & IT)	
	2.1 ICT Division	www.ictd.gov.bd
	2.2 BCC	www.bcc.gov.bd
3	Ministry of Primary and Mass Education	www.mopme.gov.bd
	3.1 DPE	www.dpe.gov.bd
	3.2 NAPE	www.nape.gov.bd
4	Ministry of Education	www.moedu.gov.bd
	4.1 DSHE	www.dshe.gov.bd
	4.2 NAEM	www.naem.gov.bd
	4.3 NCTB	www.nctb.gov.bd
	4.4 BANBEIS	www.banbeis.gov.bd
	4.5 Education Board	www.educationboard.gov.bd
	4.6 UGC	www.ugc.bd
	4.7 NACTAR	www.nactar.gov.bd

This study initiative found that the NGOs listed in Table 5 are working towards ICT integration in Bangladesh’s education sector.

Table 5. Major NGOs Involved in ICTE

SL	Name	Website
1	Activity for Reformation of Basic Needs (ARBAN)	www.arban.org.bd
2	Bangladesh NGOs Network for Radio and Communication (BNNRC)	www.bnnrc.net
3	BRAC	www.brac.net
4	British Council	www.britishcouncil.org.bd
5	Change Maker	www.changemaker-bd.org
6	Dhaka Ahsania Mission	www.ahsaniamission.org.bd
7	Dnet	www.dnet.org.bd
8	English in Action (EIA)	www.eiabd.com
9	JAAGO Foundation	www.jaago.com.bd
10	Save the Children	www.savethechildren.org

Table 6 presents a list of corporate organisations that are also contributing to ICTE in Bangladesh.

Table 6. Major Corporate Organisations Involved in ICTE

SL	Name	Website
1	Bangladesh Association of Software and Information Services (BASIS)	www.basis.org.bd
2	Core Knowledge Limited (a subsidiary of the Rahimafrooz Group)	www.core-k.com
3	Grameenphone	www.grameenphone.com/bn
4	Champs 21	www.champs21.com

In line with Vision 2021, the GoB has formulated various policies and strategies. The UNDP and USAID supported the Access to Information (www.a2i.gov.bd) programme in the Prime Minister’s Office (PMO), which provides advisory and technical support to the GoB to help realise its vision of Digital Bangladesh by the year 2021. a2i plays a critical policy advocacy role through extensive policy research, drawing lessons from both global and local best practices.

However, like most developing countries, Bangladesh recognises the potential of ICT as an unprecedented lever for economic emancipation as well as a tool for poverty reduction and human development — both equally important. Intervention by a2i or any of the development partners often requires the formulation of appropriate policy instruments in the form of government circulars, guidelines, policies, laws, etc. to ensure institutional adoption and mainstreaming. a2i plays a very active role in drafting and supporting such instruments across a number of government agencies in Bangladesh.

(Bangladesh recognises the potential of
ICT as an unprecedented lever for
economic emancipation as well as a)

CHAPTER 4: Educational Contents — Generation, Use and Distribution

This chapter presents the content development initiatives of the government organisations (GOs), the non-government organisations (NGOs) and businesses/corporations in Bangladesh. In the field of content development, the government itself is a major contributor. Most of the educational content is developed by the government and is free for students. In addition, various NGOs and corporate organisations develop educational content — for example, BRAC, the British Council, English in Action, Room to Read, Dhaka Ahsania Mission, etc. This chapter surveys students' access to educational materials to understand what problems they face.

4.1. The Government of Bangladesh

The Government of Bangladesh has initiated its Vision 2021 plan for Digital Bangladesh, intending to set up an ICT infrastructure across different areas, including education, science and technology, infrastructure development, employment generation, private sector development, agriculture, health and nutrition. At the same time, the government has placed special emphasis in the National Education Policy 2010 on using ICT in the education sector to ensure quality education throughout the country. Therefore, the Access to Information (a2i) programme, funded by UNDP and USAID and run by the PMO, has been working on content development for the past decade. It has developed a common platform, Shikkhok Batayon,¹ for all teachers in the country and has empowered those teachers to develop and share the content they develop. This interactive platform has been continuously producing a large amount of content with the help of teachers and teacher educators. In addition, a2i developed an open learning platform for teachers, Muktopaath,² which offers different professional development courses for all. The a2i programme, in partnership with the MoE, MoPME, DSHE, DPE and ICT Division, is working not only on content development but also on infrastructure and human resource development in order to ensure an effective education system for the country. To date, there are more than 100,000 digital materials created by teachers. Along with this, a2i has developed talking books for students with disabilities, specifically for visually impaired children.

4.1.1. The Ministry of Education

The Ministry of Education is the apex policy-making institution of the government regarding the administration and development of the post-primary education sector. The Ministry of Education formulates policies and programmes for the development of post-primary to higher education, including madrasah, technical and vocational education. It also formulates laws, rules and regulations for the management and administration of the post-primary education sector and related institutions. There are several associated bodies for the supervision and management of formal education in post-primary and secondary schools, colleges, madrasahs, technical schools and colleges, polytechnic institutes, engineering colleges and universities. From the perspective of Digital Bangladesh, it is one of the main bodies for achieving that goal. The DSHE and NAEM work collaboratively with the MoE. The NAEM, an apex institution under the MoE, is entrusted with the responsibility for training heads of education institutions and functionaries. It develops content for the foundation training of new entrants to the Bangladesh Civil Service (General and Technical) Education Cadre Officers, courses on

¹ <https://www.teachers.gov.bd/>

² <http://www.muktopaath.gov.bd/login/auth>

education management, courses on ICT, planning and administration, and educational research. In addition, different educational development projects and programmes (e.g., the Teaching Quality Improvement in Secondary Education Project, the Secondary Education Sector Improvement Programme) develop related content. The UGC, as an autonomous body, looks after the higher education sector, where it has taken the initiative to encourage knowledge production by introducing the Higher Education Quality Enhancement Project (HEQEP).³ The project aims to improve the quality of the teaching–learning and research capabilities of tertiary education institutions through encouraging both innovation and accountability and by enhancing the technical and institutional capacity of the higher education sector.

4.1.2. The National Curriculum and Textbook Board

The National Curriculum and Textbook Board,⁴ commonly known as the NCTB, is the largest autonomous body under the MoE for developing content. It is the largest publishing house in the world in terms of the number of textbooks it produces. The NCTB is the apex body for developing and revising national curricula for the pre-primary, primary, secondary and higher secondary levels, and for developing and refining textbooks and other teaching–learning materials based on the national curriculum. The NCTB also prints and distributes pre-primary, primary, secondary, ebte dayee, dakhil and dakhil vocational level textbooks for students, according to MoE demands, free of charge.

A total of 3,373,373 pre-primary students received free textbooks in 2016. At the primary level, 10,871,999 textbooks in 33 subjects were distributed amongst 24,571,731 students. Further, 19,255,615 textbooks in 36 subjects were distributed amongst 2,703,984 ebte dayee students, 163,004,373 textbooks were distributed amongst 11,236,018 students in Bangla and English versions at the secondary level, 2,271,836 textbooks were distributed amongst 187,153 SSC vocational students and 33,933,797 textbooks were distributed amongst dhakhil and dhakhil vocational students.⁵ Because of its free textbook distribution, it is the biggest organisation under the MoE, with a budget of BDT 976.2 million per annum for textbook publication.

The Textbooks Production and Distribution sub-component, one of the 29 sub-components of Primary Education Development Plan (PEDP) III, had DPP-approved costs from July 2011 to June 2016 of 141,027.34 (in lakh taka; approximately USD 188 million) (DPE, 2015, p. 3). Although the government distributes textbooks for free to primary and secondary school students, students in higher secondary and higher educational institutions have to bear the expenses themselves. According to BANBEIS (2015), the government expenditure upon these educational materials per student in 2014–2015 was BDT 7,173 for primary, BDT 5,761 for junior secondary, BDT 9,155 for secondary, BDT 19,603 for higher secondary (intermediate) and BDT 16,035 for tertiary.

4.1.3. MoPME

The DPE and the NAPE are working with the MoPME. The DPE focuses on improving the quality of the teaching–learning process through the use of ICT. Under the DPE, the government plans to make ICT education compulsory at the primary level by 2021. The NAPE develops educational content for primary teachers. The teacher education curriculum and associated resources books have been revised and reformed under the guidance of the NAPE. In

³ <http://www.heqep-ugc.gov.bd/>

⁴ <http://nctb.gov.bd/>

⁵ http://www.geebd.com/index/details_data/news/1540

addition, the NAPE is working with the MoPME as an autonomous organisation. Its vision is to be the centre of excellence for primary training and research. The mission of this institution is to provide training and follow-up services for the stakeholders of primary education in Bangladesh. The NAPE develops training manuals and instructional guides for different training courses for primary education officials and teachers.

4.1.4. The Bangladesh Bureau of Educational Information and Statistics

BANBEIS is the government's central depository for the collection, provision and dissemination of secondary education information and statistics. It started its activities as a department attached to the Ministry of Education. Its function is to collect, curate and disseminate all kinds of information and statistics relating to the post-primary stages of education in Bangladesh. BANBEIS acts as the apex body for the Educational Management Information System, developing, updating and maintaining computerised databases, including institutional and teacher databases, for all levels and types of education institutions at the post-primary level. Along with this, BANBEIS produces different training modules on ICT and conducts training programmes. BANBEIS is establishing 116 Upazila ICT Training and Resource Centres for Education (UITRCE), and it is developing the first e-library in Bangladesh.

4.2. Bangladesh Open University (BOU)

BOU produces textbooks for its learners. These textbooks are specially designed to help learners at a distance, and they follow the principles of self-directed learning. BOU adopted an OER policy in 2014, and some of its materials are being made available under Creative Commons licences through its eBooks Portal.⁶ Besides printed textbooks, BOU also produces video and audio programmes as supplementary resources for learners. BOU is a national resource and has the potential to transform the teaching and learning landscape in the country by providing sufficient quality learning resources.

4.3. English in Action (EIA)

The English in Action programme,⁷ funded by the UK government, aims to enable 25 million Bangladeshi adults and school children to improve their English language skills to help them access better economic and social opportunities, through professional, school-based teacher development. Teachers are guided by authentic videos of primary and secondary teachers using interactive techniques with their own classes. Audio-visual materials are provided at low cost, offline, through memory cards accessed on affordable mobile phones. In addition, EIA's media and adult learning component, BBC Janala (2008–2014), worked on adult and community interventions using mobile phones, a local newspaper, television and the Internet.⁸

4.4. Activity for Reformation of Basic Needs (ARBAN): ICTE Initiatives

ARBAN,⁹ a non-government development organisation concerned with the fundamental rights and basic needs of Bangladesh citizens, has been working since 2002 in the north-western part of the greater Mymensingh region. Its activities are primarily concentrated on the district of

⁶ <http://www.ebookbou.edu.bd/>

⁷ <http://www.eiabd.com/about-eia/eia-introduction.html>

⁸ <http://www.eiabd.com/about-eia/eia-introduction.html>

⁹ <http://www.arban.org.bd/>

Netrokona. ARBAN places special emphasis on developing the skills of local youths so they can effectively use ICT in their daily lives. ARBAN is contributing to the process of building a knowledge-based society at the grassroots level.

ARBAN contributes to content development through the following initiatives:

- **Telecentre:** ARBAN operates a telecentre in Purbadhala upazila sadar, where all types of up-to-date, livelihood-related information is available for the general public. Apart from these services, it also plays a vital role in providing information to learners on issues of admissions, exams, results, eLearning content, training and model tests.
- **Computer training:** ARBAN in 2007 started the ARBAN Institute for Computer Education and IT Resources. As an affiliated institute of the Bangladesh Technical Education Board, it provides training to the local youth community in computer office applications, database programming, hardware, networking and other customised packages for related trades. Every year, an average of 500 learners take the institute's various courses.
- **ARBAN Academy:** This institution works to build children's capacity to use different eLearning and ICT applications. It also strives to build a sustainable relationship with educational institutions. The academy serves as the base for a series of services that enhance the education system of the sub-district where it operates.
- **ICT and English Club:** ARBAN runs an ICT and English Club for local students, where members of the club learn ICT and English language regularly through groups and peer learning. The club is supported by the British Council and Dnet.
- **ARBAN Shiksha Kendra:** ARBAN runs 20 Arban Shiksha Kendra in Purbadhola upazila. In these centres, educators trained by ARBAN run multimedia-based classes. Children also enjoy cartoon shows such as *Meena* and *Sisimpur* in these centres.

4.5. Bangladesh NGOs Network for Radio and Communication (BNNRC)

The BNNRC¹⁰ is a national networking body that promotes the development of community radio in Bangladesh. It also advocates for the free flow of information, equitable and affordable access to information, and access to the Internet and communications technology for remote and marginalised communities. The BNNRC played a key role in the campaign to establish the first community radio stations in Bangladesh. It utilises community radio to provide training in basic English. The curriculum and episodes are developed for radio broadcasting in order to engage teachers, students and listener club members. In addition, it develops teaching handbooks on English language learning and capacity-building training for community radio staff, and it publishes English language learning materials through local newspapers.

4.6. BRAC: Building Resources Across Communities

BRAC¹¹ is a development organisation dedicated to alleviating poverty by empowering the poor and creating opportunities for them. Started in 1972 in Bangladesh, it has expanded to ten other developing countries, reaching over 125 million people worldwide.

The Computer Aided Learning (CAL) Programme is an endeavour of BRAC to make text content easier, more interactive and more stimulating by adding visuals. To assist teachers, the

¹⁰ <http://www.bnnrc.net/>

¹¹ <http://www.brac.net/>

BRAC Education Programme (BEP) started CAL in 2005 using the computer as a medium for teaching at the secondary level. The main task of the programme is to develop interactive digital education content based on the national curriculum and thus to improve the teaching capacity of teachers and make classes more interesting and exciting for students. The main objective is to improve the quality of education by changing classrooms from being teacher centred to being interactive, engaging and learner centred; to this end, teachers learn to use technology as an effective tool to deliver lessons. The CAL Programme has four components: content development, technical support and class follow-up, capacity building in teachers, and classroom set-up.

BRAC involves stakeholders with wide-ranging expertise in the process of materials development. Every item of CAL content developed by BRAC has been finalised after a series of review and feedback sessions involving various stakeholders. Experts in all types of educational institutions from all over Bangladesh who are involved with secondary education have contributed to reviewing CAL materials.

Multipurpose Community Learning Centres/Gonokendros: To help children, adolescents, youths and adults become familiar with ICT and its various applications, BRAC initiated a pilot project in late 1999 by providing computers to its ten Union Libraries (also known as *Gonokendros*). Most of the Gonokendros are located on the campuses of secondary schools (Classes VI through X) where a primary school is also attached. At present, 1,265 Gonokendros are equipped with computers (one to two computers in each, with printers). Gonokendro members as well as outsiders have the opportunity to take basic computer courses, practice on the computers in the Gonokendro and watch different types of CDs. Each Gonokendro is operated by a locally recruited librarian, generally a woman. Before a computer is provided to a Gonokendro, the librarian takes about 11 days (residential) of basic computer training.

4.7. Dhaka Ahsania Mission: Community Resource Centre (CRC)

Since 1958, Dhaka Ahsania Mission (DAM¹²) has made significant contributions in different sectors, including education, health, human rights, livelihood, micro-finance and climate change. DAM's dedicated work has earned it a good reputation both at home and abroad, and it is recognised for its excellent work in spreading non-formal education (via its CRC) through Gonokendros. The CRC is an extraordinary opportunity to empower underprivileged students through computer literacy training. In its programmes, students can learn the basic skills for computer operation and for using Microsoft Word, Excel, PowerPoint and Paint, as well as the pros and cons of the Internet. Furthermore, DAM has developed materials with COL's support, and these have been published under an open licence.

4.8. Dnet: ICT-based Education Initiatives

Dnet¹³ is a not-for-profit social enterprise. It was established in 2001 with the vision of a society in which information and knowledge facilitate all stakeholders' participation in the generation of wealth and its equitable distribution for poverty alleviation. Dnet provides training in ICT through the deployment of multimedia content delivered through interactive CDs. These CDs cover four secondary school subjects: English, science, mathematics and geography. All of the

¹² <http://www.ahsaniamission.org.bd/>

¹³ <http://www.dnet.org.bd/>

contents of these CDs are structured by the co-ordination of lesson plans, PowerPoint slides, video files, images, animation and games.

4.9. The JAAGO Foundation: Online School Programme

The Online School Programme (OSP) of the JAAGO Foundation¹⁴ is a collaborative effort between Grameenphone (GP), Agni System Limited and the JAAGO Foundation. The foundation's vision is to have a free JAAGO School in every district of Bangladesh. Its mission is to cater to the education needs of children from socially and economically disadvantaged backgrounds.

4.10. ICT in Education Project: Save the Children

Save the Children (SC) in Bangladesh has been assisting the children of the country since 1970 through its multidimensional interventions in the areas of child protection, health and nutrition, livelihoods and food security, HIV/AIDS, humanitarian and emergency response, education and child rights governance (Save the Children, 2013). Since 2009, Save the Children has been working towards the goal of improving the quality of primary education and student learning through an ICT-infused education system. The GoB's PEDPs II and III aimed to improve the quality of primary education through the proactive use of ICT. To supplement the government's initiatives, Save the Children, with permission from the DPE, initiated the ICT in Primary Education project in selected government primary schools in Meherpur. Over time, the project demonstrated a wider applicability and had an impact at the national level.

The content-development initiative of Save the Children started with English as a subject in multimedia classrooms (classrooms equipped with a laptop and a projector). The supplementary e-content consists of Flash-based, multimedia-enriched, interactive lessons based on national textbooks. It is used as an additional tool for enhancing student learning. The supplementary content is pedagogically appropriate, with numerous pictures, activities, assessments and opportunities to practice. The content also introduces games and animation to make learning enjoyable. Through delivering the supplementary e-content, teachers gain new pedagogical skills and are able to take full advantage of the potential of technology to enhance student learning and practice the four language skills (listening, speaking, reading and writing).

4.11. Core Knowledge Limited (a Rahimafrooz Company)

Core Knowledge Limited,¹⁵ a concern of the Rahimafrooz Group, is focused on delivering innovative education and eLearning solutions for K-12 schools and beyond. Core Knowledge's Smart School Solutions reach 20,000 students and 3,000 teachers across government and private schools.

4.12. Champs 21

After its launch in October 2010, Champs21.com¹⁶ has catered to both Bangla- and English-medium students, primarily offering a self-assessment test service for students to assess their strengths and weaknesses in mathematics and science so they can move towards a stronger

¹⁴ <http://jaago.com.bd/>

¹⁵ <http://core-k.com/>

¹⁶ <http://www.champs21.com/>

academic foundation. It also enables students to brush up on their “beyond-textbook” learning in both Bangla and English.

4.13. Open Access Repositories in Bangladesh

Many organisations in Bangladesh have developed open access repositories. To date, ten organisations in the country have registered for open access repositories. Table 7 shows the institutions and their establishment year.

The goals of most of these repositories are to increase the visibility, use and impact of institutional research publications by offering them for use through their own digital archives. An archive consists of the full text of materials produced in institutions, such as theses, internship reports, journal articles, conference proceedings and research materials produced by the departments, institutes and research centres of institutions. An individual can start by browsing the collection or by searching within it. However, those repositories are not openly licensed.

Table 7. Registered Open Access Repositories in Bangladesh

SL	Open Access Repository	Year
1	Bangabondhu Shekh Mujib Medical University, Bangladesh http://www.bsmmu.edu.bd/	2008
2	Daffodil International University Institutional Digital Repository http://dspace.daffodilvarsity.edu.bd:8080/	2013
3	DSpace at BRAC University http://dspace.bracu.ac.bd/	2009
4	EWU Institutional Repository http://gsdl.ewubd.edu/greenstone/cgi-bin/linux/library.cgi http://dspace.ewubd.edu/	2014
5	IUB Library Digital Repository, Independent University, Bangladesh http://dir.iub.edu.bd:8081/	2012
6	Eastern University Digital Library http://gsdl.easternuni.edu.bd/greenstone/cgi-bin/library.cgi	2013
7	International Centre for Diarrhoeal Disease Research Digital Repository, Bangladesh http://dspace.icddr.org/dspace/	2012
8	National Library Digital Repository http://dl.nlb.gov.bd/greenstone/cgi-bin/linux/library.cgi	2014
9	Dhaka University Institutional Repository http://repository.library.du.ac.bd/	2013
10	IUT Digital Library http://lib.iutoic-dhaka.edu/	2013
11	Government of Bangladesh, Department of Disaster Management, e-Library of Disaster Management http://kmp.dmic.org.bd/	

Sources: <http://roar.eprints.org/view/geoname/geoname=5F2=5FBD.html>,
<http://www.openoer.org/countrylist.php?cContinent=Asia#Bangladesh>

4.14. Students’ Access to Educational Content: Survey Findings

Whilst various efforts are underway to create educational materials for free distribution, including several initiatives to produce digital content at the K-12 level, there is not much happening in terms of providing access to educational content at the higher education level. In order to understand the problem of students to access educational materials, a study was

conducted amongst university students in Bangladesh. An online questionnaire¹⁷ was distributed across universities in Bangladesh. A total of 576 usable student responses from 27 universities were received. Of the universities, 20 were public, six were private and one was international (see Annex 2 for the list of universities). Eighty-eight per cent of the responses were from public universities, whilst nine per cent came from students in private universities and three per cent from international universities. Gender-wise, the respondents were largely male (77.1 per cent), with only 22.9 per cent female.

4.14.1 Respondents' Profiles

All the respondents were university students, though there was some demographic variation between institutions. Figure 2 indicates that the respondents' ages ranged from 18 to 40 years. However, almost 97 per cent of them were in the age group 18–30, with the remaining three per cent aged 31–40.

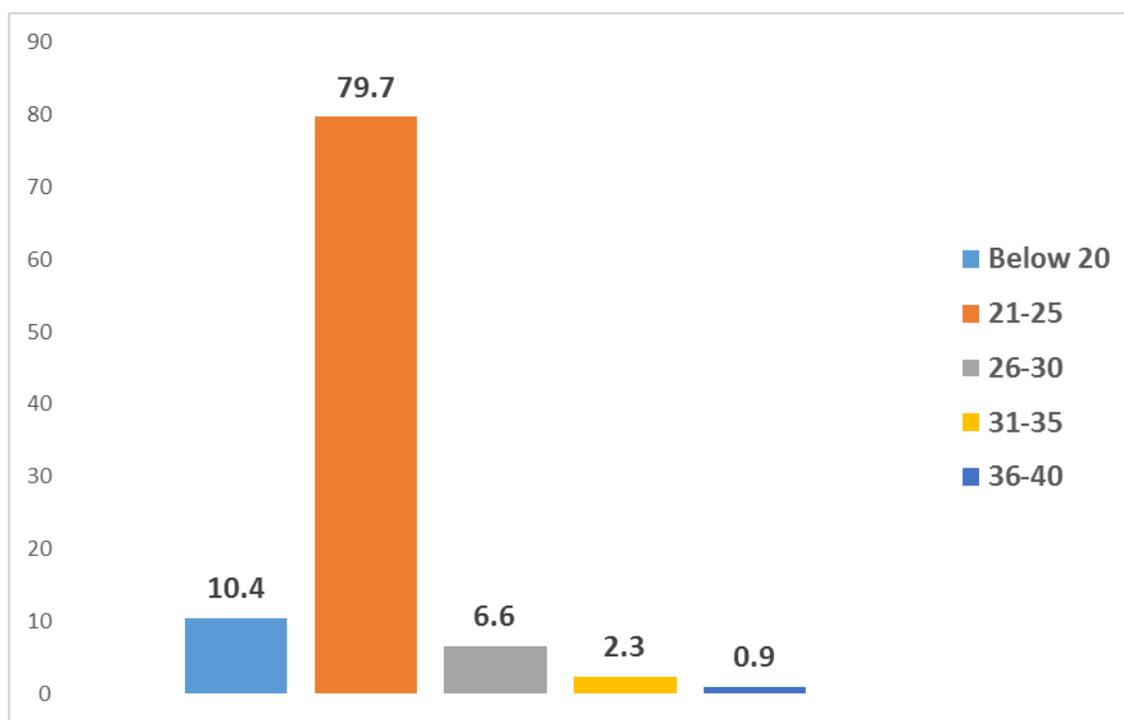


Figure 2. Respondents by age groups

Figure 3 shows that 83 per cent of the respondents were studying for a bachelor's degree and 16 per cent for a master's degree, and one per cent were in other postgraduate programmes.

¹⁷ <https://goo.gl/B8mQAE>

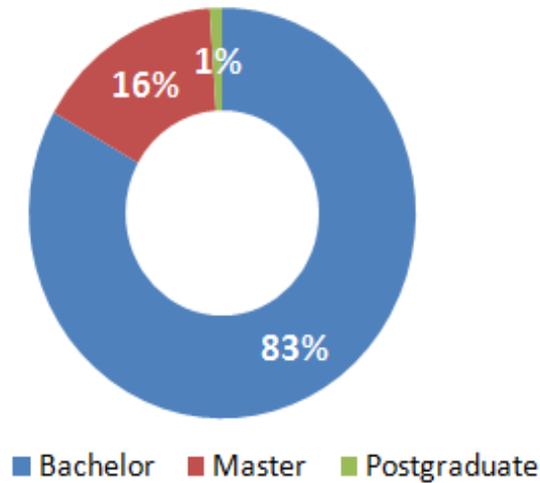


Figure 3. Respondents' level of education

Figure 4 indicates that 11 per cent of the respondents were from the humanities, business and fine arts disciplines, and the rest were from the science, engineering, medical and agriculture disciplines. The highest share was engineering students (56.40 per cent).

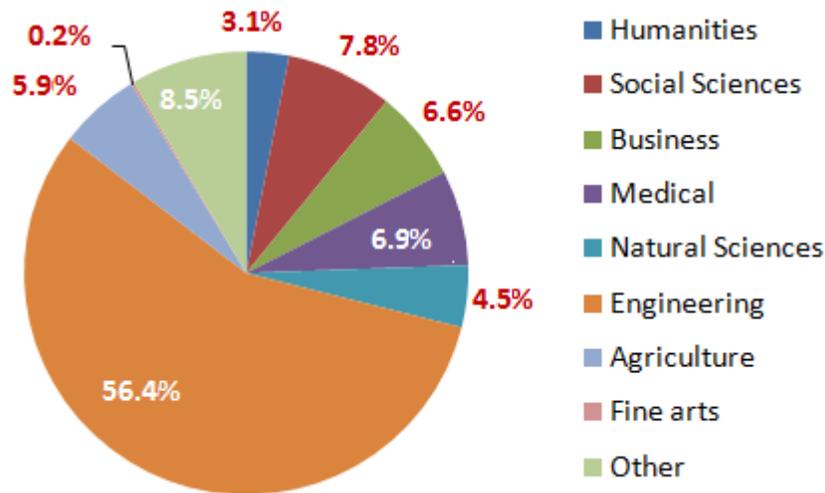


Figure 4. Respondents' discipline of study

Figure 5 indicates that 6.9 per cent of the respondents had one or more types of physical or learning disabilities as per their personal statements. However, respondents may not have clearly understood this question. It is important to note that there is always about 15 per cent of the world's population living with some sort of disability, so providing these students with equitable access to educational resources should be a top priority.

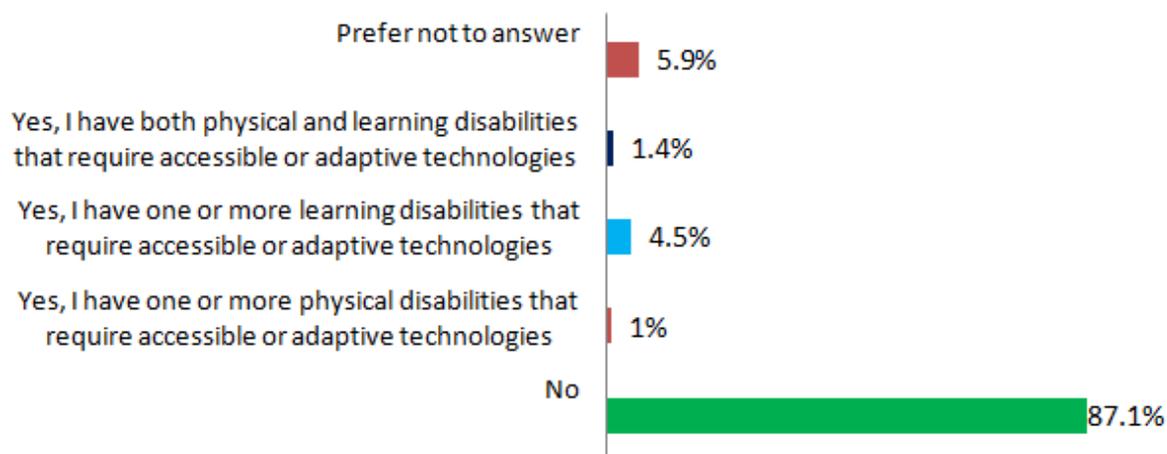


Figure 5. Physical and/or learning disabilities

Figure 6 shows that most of the respondents (76 per cent) were attending face-to-face courses, whilst 22 per cent were attending blended courses and two per cent were distance learners. The relatively high percentage of blended courses indicates that universities in Bangladesh have been using technology to deliver some of their courses.

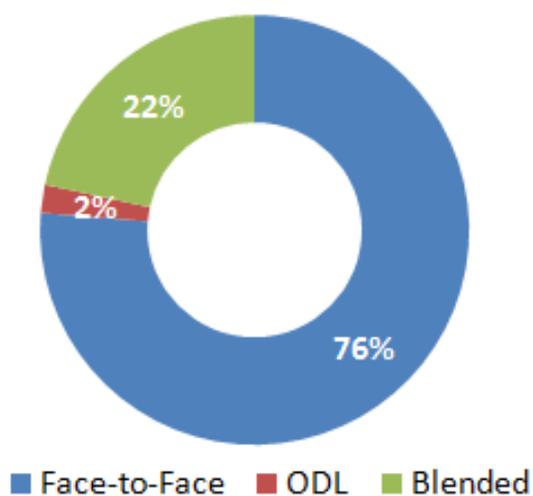


Figure 6. Mode of delivery in respondents' courses

4.14.2 Access to and Use of ICTs

Access to ICT Devices: 95 per cent of the respondents indicated they had a smartphone, whilst 86 per cent also had a laptop and only 59 per cent had a desktop; 22 per cent indicated they had a tablet (Figure 7). The data indicates that students have more than one ICT device and the use of mobile phones is almost pervasive.

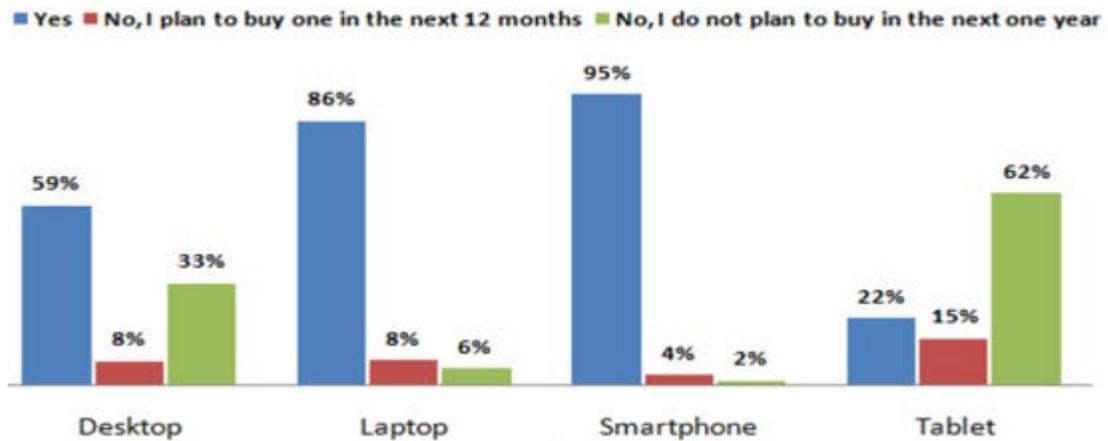


Figure 7. Ownership of devices

Internet Access: Almost all (97.4 per cent) of the respondents accessed the Internet at their homes. However, 11.8 per cent also indicated they used the Internet at their offices, and 3.5 per cent used cybercafés (Figure 8).

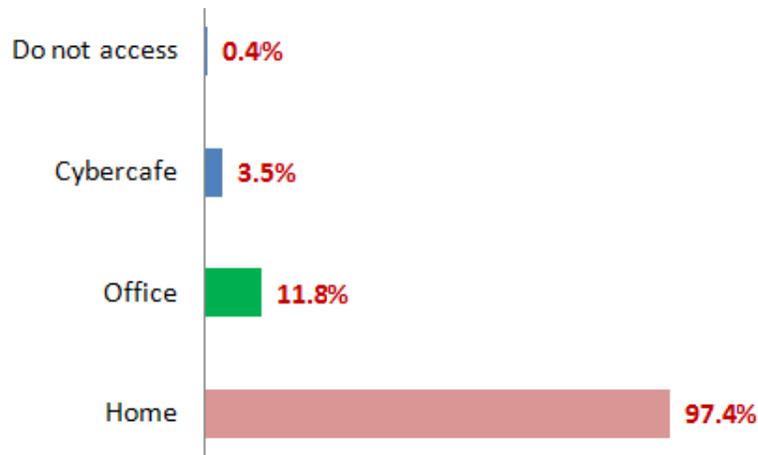


Figure 8. Place of Internet access

Network Access: The respondents primarily accessed the Internet using their mobile data (66 per cent), followed by wireless means (52.7 per cent). Figure 9 shows that respondents used multiple types of networks to access the Internet.

Device Used for Internet Access: Whilst 95 per cent of the respondents owned a smartphone, only 58.8 per cent used it to browse the Internet; 32.7 per cent of the respondents used laptops to access the Internet (Figure 10).

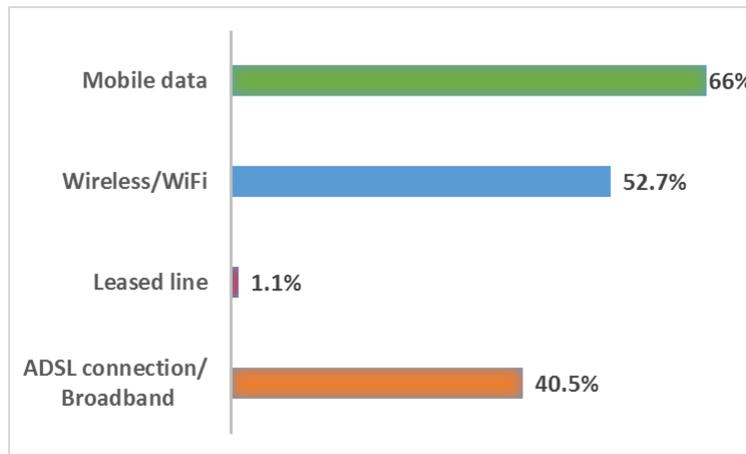


Figure 9. Type of Internet network used

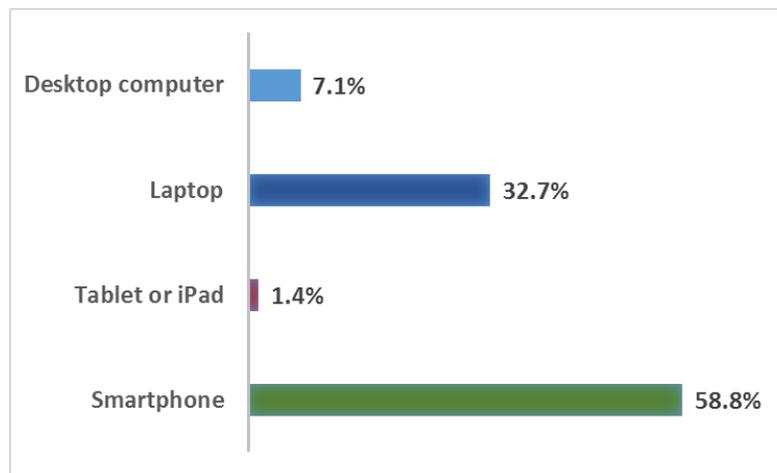


Figure 10. Devices used for Internet browsing

Web Searches: Ninety-nine per cent of respondents indicated that they searched the Web to find learning resources related to their subject of studies. Table 8 shows that the respondents mostly went to Wikipedia (50.34 per cent) to search for learning resources. The weighted scores of the data reveal that whilst Wikipedia was the most searched place, respondents primarily searched for textbooks, followed by video resources. Table 9 shows how often the respondents were able to find relevant learning resources: 71.2 per cent indicated they found relevant materials on Wikipedia, whilst only 29.6 per cent found relevant books on the Internet most of the time. The data show the difficulty they had with finding the appropriate textbooks, multimedia resources, videos and journal articles for learning.

4.14.3 Textbook Use

Respondents mentioned that on average, they received a list of at least five to 15 textbooks from their teachers in a year. Figure 11 shows that 20 per cent of the respondents indicated they received textbook recommendation for fewer than six books in a year, whereas 32 per cent received seven to ten, 22 per cent received 11–15, and 11 per cent received 21–25. The average number of recommended books was 11. Respondents either bought or downloaded the recommended books; 62 per cent indicated that they bought/downloaded one to five textbooks in a year. The average number of the books purchased or downloaded was six. Respondents also indicated that they borrowed several books from libraries and friends in a year; 68 per cent

borrowed one to five books on average, whilst 14 per cent borrowed six to 12 books and only four per cent borrowed 13 or more. The average number of books borrowed from libraries or friends was six (Figure 13). Hence, most of the respondents used about ten books in a year.

Table 8. Searching for Learning Resources on the Web

	Never	Rarely	Sometimes	Often	Almost All the Time	Weighted Score	Rank
Books	0.52	2.92	21.48	29.38	34.19	2091	2
Journal articles	4.81	9.11	22.16	23.71	19.24	1633	8
Video lessons	0.69	3.09	14.95	26.29	39.86	2073	3
Maps	7.04	9.11	23.71	15.81	14.26	1344	9
Pictures, illustrations, graphics	2.41	4.3	16.67	25.95	29.73	1824	6
News	1.89	3.95	14.6	21.65	36.25	1871	5
Dictionaries	2.06	4.47	12.2	20.96	39.18	1905	4
Wikipedia	1.2	3.09	10.82	22.16	50.34	2213	1
Multimedia resources	3.26	4.98	18.9	21.31	25.6	1648	7

Note: Figures in percentages; multiple responses.

Table 9. Success Rate for Finding Relevant Resources on the Internet

	Response	Almost All the Time	Often	Sometimes	Rarely	Never	Total
Books	Number of respondents	149	175	138	36	5	503
	%	29.6%	34.8%	27.4%	7.2%	1%	100%
Journal articles	Number of respondents	116	155	125	38	15	449
	%	25.8%	34.6%	27.80%	8.5%	3.3%	100%
Video lessons	Number of respondents	228	170	80	4	4	486
	%	46.9%	35%	16.5%	0.8%	0.8%	100%
Maps	Number of respondents	155	113	77	28	28	401
	%	38.7%	28.2%	19.2%	7%	7%	100%
Pictures, illustration, graphics	Number of respondents	195	157	83	11	10	456
	%	42.8%	34.4%	18.2%	2.4%	2.2%	100%
News	Number of respondents	237	124	57	12	7	437
	%	54.3%	28.4%	13%	2.7%	1.6%	100%
Dictionaries	Number of respondents	294	96	43	4	8	445
	%	66.1%	21.5%	9.7%	0.9%	1.8%	100%
Wikipedia	Number of respondents	350	92	40	6	4	492
	%	71.2%	18.7%	8.1%	1.2%	0.8%	100%
Multimedia resources	Number of respondents	122	152	101	21	16	412
	%	29.6%	36.9%	24.5%	5.1%	3.9%	100%

Note: Multiple responses.

We asked students about their book purchasing habits. It is interesting to note that Figure 14 shows only seven per cent of the respondents bought original textbooks. Most indicated they bought photocopied materials (normally called Nilkhet prints in Dhaka). Most (67.60 per cent) mentioned that the original publisher-supplied printed books were too expensive for them to buy. Some respondents also indicated that books were not available in their local market (Figure 15).

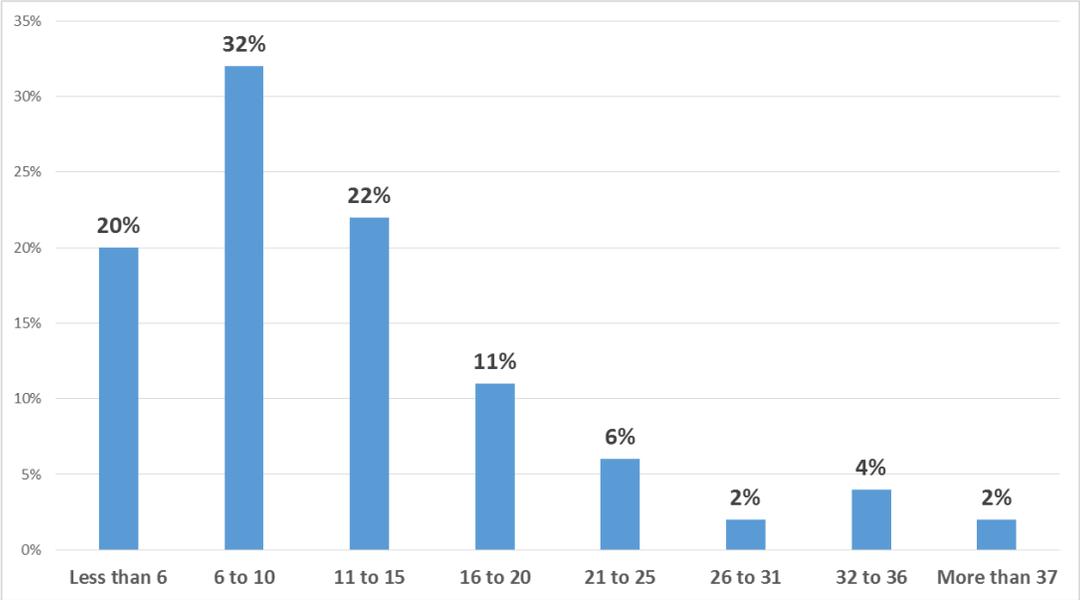


Figure 11. Number of recommended textbooks in a year

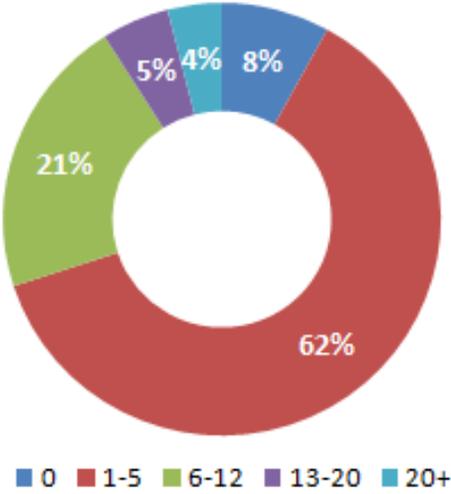


Figure 12. Number of books purchased or downloaded

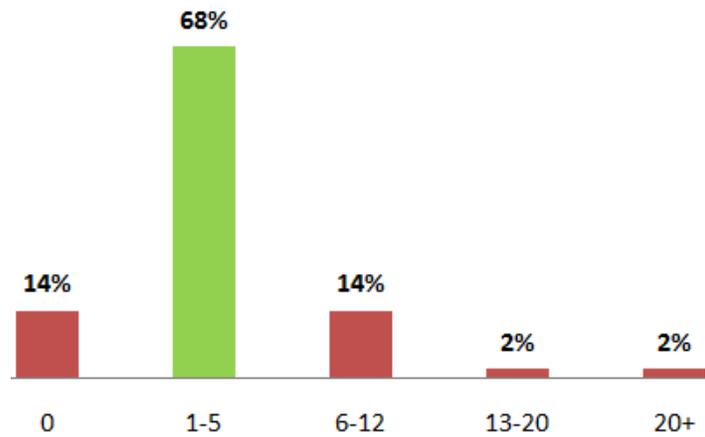


Figure 13. Number of books borrowed from libraries or friends

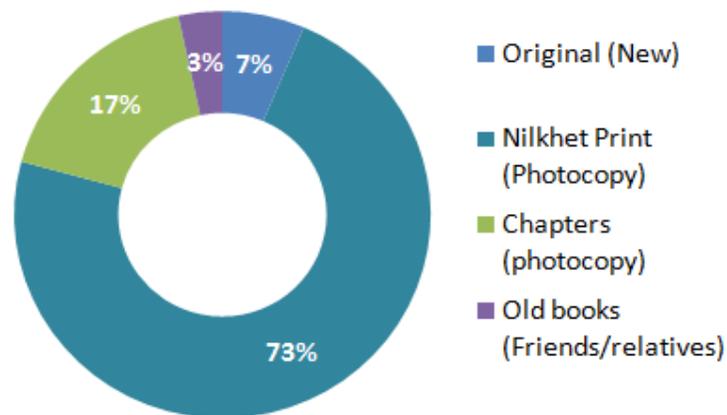


Figure 14. Types of books purchased

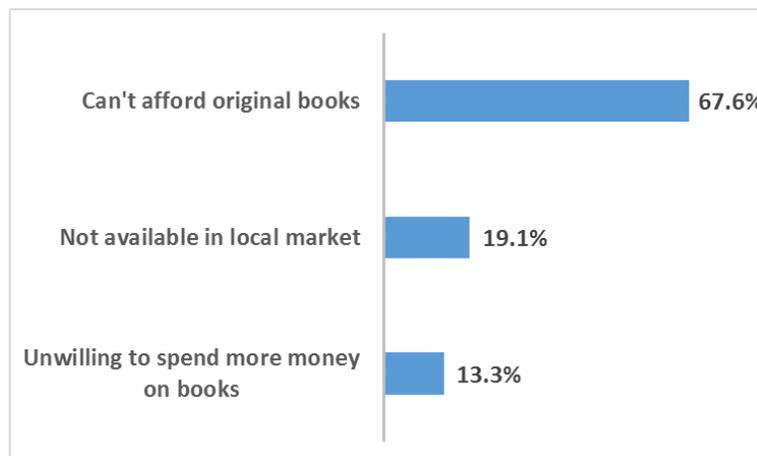


Figure 15. Reasons behind avoiding original books

When asked about not purchasing books, 33.20 per cent of the respondents indicated they were somewhat concerned that this would hurt their grades, whilst 26.80 per cent said they were significantly concerned and 19.10 per cent said they were not concerned (Figure 16). Respondents also indicated that their decision to choose a particular discipline was significantly impacted by the cost of textbooks (33 per cent), followed by 31.5 per cent who indicated that they were somewhat concerned about the cost of textbooks when choosing their discipline (Figure 17).

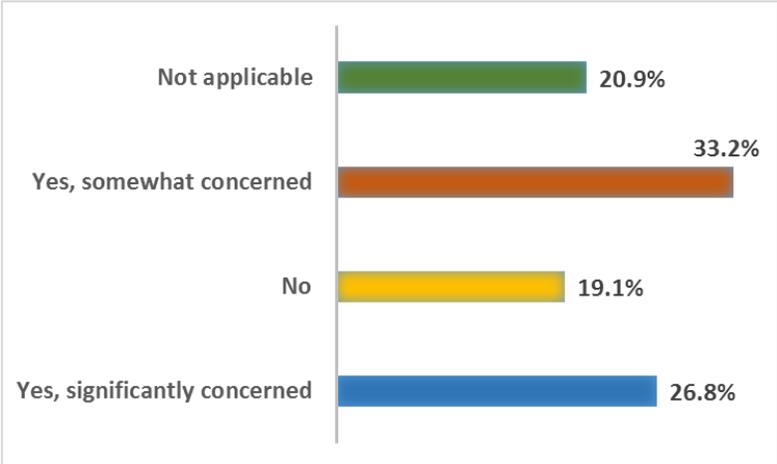


Figure 16. Concern about impact of not purchasing textbooks on grades/results

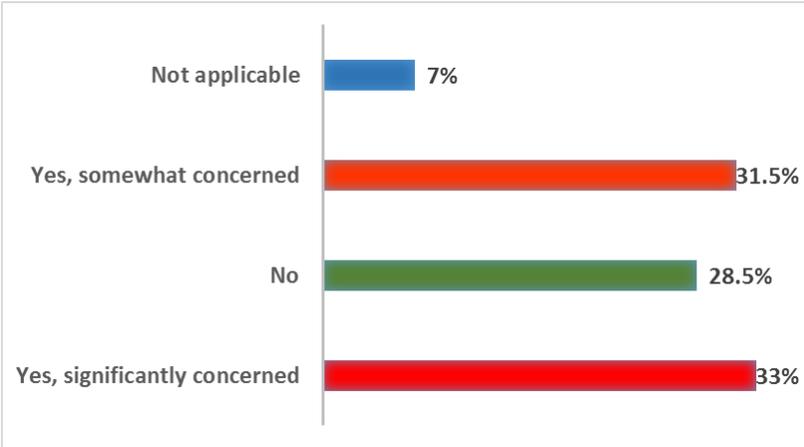


Figure 17. Textbook cost sensitivity when choosing a discipline

We wanted to understand how much money the students spent on buying textbooks. Over one-third of the respondents (36 per cent) indicated they spent less than BDT 1,000 on textbooks, 28 per cent said they spent BDT 1,000–2,000, 18 per cent spent BDT 2,000–3,000, and few spent more than BDT 3,000 on textbooks, as indicated in Table 10. The average spending on books was BDT 1,850. If we extrapolate this data to the total number of students in higher education (college and university students in 2015) in Bangladesh, we get a staggering figure of BDT 258,872,350 spent by students per year to buy textbooks.

Table 10. Total Yearly Spending on Textbooks

Expenditure [BDT]	Number of Respondents	%
0	12	2%
Less than 1,000	188	36%
1,001–2,000	146	28%
2,001–3,000	93	18%
3,001–4,000	31	6%
4,001–5,000	22	4%
6,001 and above	29	6%
Total	521	100%
Average spending on textbooks = BDT 1,850		

4.14.4 Awareness about Copyright Issues and OER

Since most of the respondents were downloading materials from the Web, we asked them about their awareness of copyright and OER. As Figure 18 shows, 42.1 per cent indicated they were significantly concerned about copyright issues whilst downloading educational resources from the Web, 24.8 per cent said they were somewhat concerned, 24.4 per cent said they were not at all concerned, and 11.4 per cent said they were not aware of copyright issues. Only 23 per cent were aware of OER. However, when asked to give examples of OER, most respondents failed to point to OER materials or websites. This indicates a need to create awareness about and advocate for OER in Bangladesh.

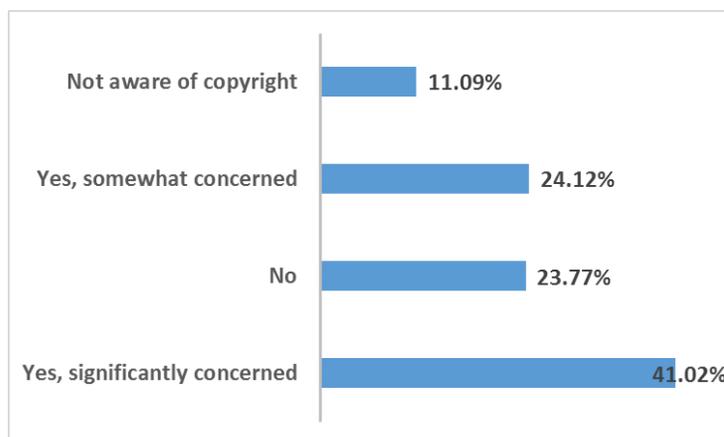


Figure 18. Concern about copyright issues whilst downloading resources from the Web

4.14.5 Respondents' Overall Remarks Regarding Educational Resources

We asked the learners about their overall experiences and views in the context of access to educational materials and textbooks. Some of the important responses received are illuminating and indicate the problems faced by learners when trying to access educational resources. They considered textbooks to be a major part of educational life in college and university.

One student responded: “Without a textbook it’s very hard to understand any topic of content clearly.”

Another stated that “textbooks are really helpful. I can’t manage my studies without textbooks. It helps me to concentrate and it fulfil my thrust to know more about any topic.”

However, respondents were concerned about the cost of textbooks and thought they should be made available for free:

“I think textbooks should provide free for students as the cost of original books are huge . . . another way is to make every book free in online so that we can easily find the books and read them.”

“I think we have to use text book for learning but government or UGC ensure it free through internet or another source. It is quite difficult to pass or achieve a good grade without text book, it is possible if the faculty makes the lesson easy and supply important note through university website or through email.”

Because of the cost of textbooks, students are forced to depend on photocopied materials. One student indicated a problem with using these photocopies:

“Studying from textbooks was always my type in earlier days. But after getting admitted here into Engineering I feel it awkward. Reading from the photocopy print is kind of weirdest thing. Sometimes, some information goes missing. But with the help of Internet I am successfully carrying on my engineering course. One more important thing here to mention that original print of the books are costly but I can’t afford to buy one. But it feels great to study from the original printed books.”

Students were also concerned about copyright, and one respondent suggested:

“There should be a common platform where Study Materials of both kinds (free and available on money) will be available so that people who don’t want to get involved with copyright issues can refrain from using study materials with copyright issues.”

It is important to take note of the digital environment and the problem of access to educational materials in Bangladesh, and then to develop a strategy for using OER in the country’s teaching and learning environments.

It is important to develop a strategy for using OER in the country’s teaching and learning environments.

CHAPTER 5: Open Educational Resources: Opportunities for Bangladesh

5.1. OER Readiness of Bangladesh

The growth of access to ICT in Bangladesh, plus several initiatives and the Government of Bangladesh's policy, provide an enabling environment for Bangladesh to adopt OER in its teaching and learning strategy. Bangladesh has an ICT in Education Master Plan that focuses on strengthening access for all to quality learning materials. There are several websites for teachers to share educational content, which can easily be converted into OER by developing appropriate policies and providing teacher training. Bangladesh Open University already has an OER policy for its educational materials, and some NGOs are also using Creative Commons licences to release materials openly. There are several open access repositories in the country, which indicates the availability of local technical knowhow to host repositories of educational materials with open licences.

Educational materials available on the Internet are mostly in English. Bangladesh, being a predominantly Bangla-speaking nation, could take the lead in developing educational materials in Bangla, not only to help its citizens but also to assist the Bengali diaspora worldwide in using and contributing openly licensed materials on the Web.

5.2. National Consultation on OER

With the support of the Commonwealth of Learning (COL), and in collaboration with a2i, BOU organised a national consultation on developing an OER Policy for Bangladesh, which was held in the Prime Minister's Office on 19 March 2017. The purpose of the national consultation was to:

- share the status of learners' access to educational resources at the tertiary level in Bangladesh;
- initiate discussions on the challenges tertiary-level students face when trying to access educational resources;
- engage stakeholders in group discussions on a draft National OER Policy for Bangladesh;
- summarise the concrete feedback on the draft policy and strategy, and make recommendations for disseminating the policy; and
- encourage stakeholders to promote and adopt open licences for the educational materials they create, especially those developed with public funds.

The inaugural session of the national consultation was chaired by Professor Abdul Mannan, Chairman of the University Grants Commission of Bangladesh, and was facilitated by Professor M.A. Mannan, Vice Chancellor of Bangladesh Open University. Representatives of various organisations attended the workshop and provided input to develop the policy. The list of workshop participants is provided in Annex 1.

Participants reviewed a draft OER policy and offered constructive comments. Some of the suggestions received from the participants were as follows:

Arguments for OER Policy

- Bangladesh needs an OER policy to achieve education for all (EFA).
- OER will help Bangladesh achieve SDG4 by enhancing access to quality knowledge repositories for students, teachers and researchers.
- OER offer an additional opportunity to supplement face-to-face as well as ODL systems.
- OER should be in Bengali as well as English.
- There should be a central OER repository.
- Public–private partnerships should be encouraged to make OER initiatives scalable and meaningful.

Suggestions for the Focus of the Policy

- Continuous supervision of open resources to maintain quality.
- Building awareness amongst institutions, teachers and students.
- Ensuring accessibility/inclusiveness.
- Upgrading the ICT infrastructure for training.
- Formulating various committees to promote and manage OER. The recommended committees include: Verification Committee, Editorial Board, Certification Committee, Authentication Committee, Discipline-Based Expert Team and Quality Assurance Team.
- Appropriate and context-specific content development.

Prospective Challenges with Policy Implementation

- Lack of stable Internet connectivity.
- Lack of adequate bandwidth availability for hardware and software to meet data standards.
- Lack of skilled human resources and competent maintenance services.
- Lack of awareness about OER.
- Attitude in favour of all rights reserved policies.

Based on the input gathered during the national consultation, the revised draft OER policy for Bangladesh is presented in Annex 3.

5.3. Why Bangladesh Should Invest in OER

Education is of critical importance in a knowledge society. It is a source of basic skills, a foundation for the development of new knowledge and innovation, and an engine for socio-economic development. Whilst there has been progress in expanding access to education, quality is still a matter of concern in many parts of the world. Bangladesh also continues to face challenges of expanding access to education, improving quality and ensuring equity at all levels of education, particularly in higher education.

Providing high-quality education is a concern for developing countries. Educational content forms a major part of the delivery of quality education programmes at both school and university levels. Courseware needs to be appropriate and continuously updated to respond to global changes and to equip students with skills for participating in the knowledge economy. The situation in Bangladesh highlights the need for increased investment in curriculum/course design and development, and the need for better quality materials as part of a broader process of improving education programmes.

The survey of students in the higher education institutions in Bangladesh provides some important justifications for adopting OER in Bangladesh. Some of these are:

- 95 per cent of the respondents had smartphones, 86 per cent had access to a laptop, 59 per cent to a desktop and 62 per cent to a tablet. So, learners have ICT tools to access educational materials available as OER in digital form.
- About 97.40 per cent of the respondents used the Internet at their home, 11.80 per cent used the Internet at their offices, too, and 3.50 per cent used the Internet at cybercafés. Internet access makes OER possible, and the integration of OER in teaching and learning would help teachers access OER available worldwide and contextualise them for use by students in Bangladesh.
- About 99 per cent of the respondents used the Internet to find learning resources. So, students are already using the Internet to locate relevant educational materials. However, they do not find suitable textbooks online, and they depend largely on Wikipedia.
- Students in Bangladesh use on average about ten books per year. Whilst they buy about half of these, the rest are used by borrowing from friends and libraries. Most of the books purchased are photocopied version (Nilkhet prints), as the cost of originals is not affordable. Using OER will reduce learners' dependency on photocopied materials, which also has issues associated with copyright infringement.
- Students are concerned about not purchasing books, as this hurts their academic grades. Thirty-three per cent of the respondents were influenced by the cost of textbooks when choosing their discipline, whilst 31.5 per cent were somewhat concerned about the cost of textbooks when making that decision. OER will enable learners to choose their ideal subject and follow their interests and passions.
- Students spend on average BDT 1,850 per year on textbooks, which is over BDT 258 million annually when we consider the number of students in all colleges and universities. This potential savings could be utilised by students in different ways if OER are adopted systematically in Bangladesh.

If we consider the current context of education and the nation's socio-economic priorities, it is clear that students cannot afford the necessary educational resources. Another factor to note is that government money is spent again and again on creating similar educational resources because these are not shared. Limited access to educational resources significantly hurts student grades and influences their decisions when selecting a discipline of study. In addition, the current mode of access to educational resources is not legally acceptable, and students are forced to use resources at the risk of copyright infringement. OER can ensure easy and fair access to educational resources for students.

As a developing country, Bangladesh can reap benefits in terms of efficiency, access and quality if it adapts, adopts, creates and shares educational resources with open licences. If the government endorses OER in its education system, the marginal cost of educational resources will be very low and students will have almost free access to educational resources. Further, as OER are flexible to edit or customise, teachers will be able to adopt available OER to create new resources for students in Bangladesh. OER will be helpful in narrowing the quality and access gaps in education, which in turn will help ensure that the country achieves SDG4.

OER can ensure easy and fair access
to educational resources for students.

CHAPTER 6: Conclusion and Recommendations

6.1. Conclusion

The study and the consultation process led to the development of a draft National OER Policy for implementation in Bangladesh. It is important to note that Bangladesh has a mature and highly developed ICTE system that is spearheaded by the government's plan for Digital Bangladesh by 2021. Adoption of an OER policy by government ministries and agencies would strengthen the existing infrastructure and help Bangladesh emerge as a knowledge contributor rather than a knowledge consumer. Using OER will bring cost savings to students and improve students' learning outcomes and aspirations so they can study the specific disciplines of their choosing. It will also improve teachers' and students' understanding of copyright and the use of openly licensed materials. Using such materials in teaching and learning will foster an environment of sharing, collaboration and co-creation, leading to a transformation of the country's educational landscape. Teachers will create new learning materials on the basis of available OER and improve learning in context.

6.2. Recommendations

Considering the key findings of the study and the national consultation, the following recommendations can be made to ensure easy and free access to quality learning resources:

- All educational resources created using public funds should be released under an open licence, and appropriate policy should be adopted at the national level to guide educational institutions and other national agencies in the development of learning materials.
- The awareness and capacity of teachers and students should be built up in terms of using OER in their teaching and learning.
- Institutions should create OER repositories to give teachers and learners better access to open resources.

6.3. Action Plan

In order to make OER programmes in Bangladesh optimally successful, the following action plan is proposed:

- That the proposed OER policy be adopted at the earliest at the national level.
- That existing national portals for educational materials, such as Shikhhok Batayon and Muktopaath, be released as OER. In addition, that all other portals for sharing educational materials be made OER compliant by adopting specific licences suitable for the site.
- That a scheme for national OER content development programmes in higher education be announced, with pilot projects in key subject areas at the beginning.
- That all content developed for primary and secondary levels be made available as OER as a result of the adopted OER policy.
- That a nation-wide programme of capacity building in OER be initiated to help more teachers adopt and share educational materials with open licences.
- That better co-ordination mechanisms be developed amongst the agencies involved in ICTE and content development to avoid duplication of effort.

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44. Mr. Mushfiqur Rahman, Field Officer, Quality Educators for Every Child, Save the Children in Bangladesh RDRS, Rangpur
45. Mr. Atiqur Rahman, Assistant Professor, CSE Department, Chittagong University, Chittagong
46. Mr. Abdus Salam, Associate Professor, Dhaka University, IER, Dhaka University
47. Mr. G.M. Rakibul Islam, Lecturer (attached to a2i Programme), a2i Programme, Prime Minister's Office

ANNEX 2: List of the Universities in the Survey

Sl.	Institution Name	Category
01	BRAC University	Private
02	Dhaka International University	Private
03	East West University	Private
04	Independent University Bangladesh	Private
05	Port City International University	Private
06	Victoria University of Bangladesh	Private
07	Bangladesh Open University	Public
08	Bangladesh University of Professionals	Public
09	Bangladesh University of Textiles	Public
10	Chittagong Veterinary and Animal Sciences University	Public
11	Comilla University	Public
12	Islamic University of Technology	International
13	Jahangirnagar University	Public
14	Jatiya Kabi Nazrul Islam University	Public
15	Jessore University of Science and Technology	Public
16	Khulna University	Public
17	Mawlana Bhashani Science and Technology University	Public
18	National University	Public
19	Noakhali Science and Technology University	Public
20	Pabna University of Science and Technology	Public
21	Patuakhali Science and Technology University	Public
22	Rajshahi University	Public
23	Sher-e-Bangla Agricultural University	Public
24	Sylhet Agricultural University	Public
25	University of Barisal	Public
26	University of Chittagong	Public
27	University of Dhaka	Public
Total		27

ANNEX 3: Draft National OER Policy

National Open Educational Resources (OER) Policy of Bangladesh 2017

1. OBJECTIVE OF THE POLICY

The main objective of this policy is to provide direction in the use of **open educational resources (OER)** to enhance access to and create quality educational resources in Bangladesh. Therefore, the policy seeks to strengthen commitment to OER by all concerned stakeholders in the country. The policy will help improve access to learning materials developed with public funds by releasing these in digital format or otherwise under an open licence, preferably the most current version of one of the Creative Commons Attribution licences. Adoption of the OER policy will also foster (i) collaboration and sharing amongst educational/training/research institutions to create knowledge/skill resources and improve the pedagogical practices and professional growth of teachers, as well as (ii) low-cost or zero-cost access for learners to quality resources.

2. POLICY CONTEXT

In recent years, increasingly available quality teaching–learning materials have paved the way for educators and learners to gain access to a wide variety of educational resources in diverse formats (print, text, audio and visual), which in turn has allowed dynamic knowledge creation by different stakeholders. All over the world, the emergence of the concept of OER is playing a vital role in leveraging equal access to quality education by all. Most importantly, students can greatly benefit from OER, as they can access educational and training resources at very low or zero cost.

The traditional mode of delivery of education in Bangladesh is teacher-centric, supplemented by prescribed printed textbooks, which are largely subsidised by the government at the primary and secondary levels. At the tertiary level, educators and students follow reference books written by national and international authors. However, during recent years, the integration of information and communication technology (ICT) into the education system has been promoted and strengthened through various government strategies, including the establishment of ICT labs, the development of an ICT infrastructure, multimedia classrooms in schools, the introduction of ICT as a subject in school curriculum, the establishment of online professional development platforms for teachers and students, and capacity development for teachers. In this regard, OER can act as a lever which will allow educational institutions to fully harness the potential provided by the government’s ICT initiatives. At this point, the integration of OER into teaching and learning would enhance the quality and equity of education by providing teachers and students with the best OER from Bangladesh and around the world, reducing the cost of textbooks, and increasing the sharing of educational resources amongst Bangladesh’s education institutions. Moreover, encouraging educators and authors to engage in the production of supplementary educational materials as OER would allow the adaptation and adoption of existing quality materials to match the national school curriculum requirements, which are already being practiced by teachers (see www.teachers.gov.bd).

The national government is by far the largest producer of textbooks and teaching and learning materials in Bangladesh, though for-profit business organisations also create a large amount of content each year. Knowledge resources created are protected within the country by the Copyright Act 2000 (amended in 2005). The Copyright Act provides clarification and guidelines for all, including academics, writers, staff, contract workers and learners, regarding the ownership of created works and the practices for the publication, use, reuse, remixing and redistribution of material. Bangladesh’s copyright law is aligned with the Berne Convention, which allows the author/owner of the copyrighted resources to retain all rights and/or to authorise appropriate use (i.e., through an open licence) of the resources, which is important for making material available as OER. The 2012 OER Paris Declaration urges all governments to release under an open licence teaching and learning materials developed with public funds, to allow

others to reuse, revise, remix and redistribute the work. By and large, government organisations in Bangladesh make resources available online to the public, but those resources are not released under an open licence.

Releasing publicly funded teaching and learning materials under an open licence (preferably the most current version of one of the Creative Commons Attribution licences) will bring the following advantages to Bangladesh:

- Increased equal access to quality learning resources.
- Enhanced free and open access to knowledge which can be reused and repurposed in different forms.
- Stronger ICT-enabled learning as well as open learning through better engagement of learners
- Lower costs for student learning resources.
- Promotion of a culture of sharing and openness amongst educators, researchers and other content creators and publishers.
- Encouragement of more innovation in teaching and learning.
- Transformation of teaching and learning by enabling innovative pedagogical practices.
- Facilitation of inclusive education for learners with varying abilities.
- Expansion of outreach to disadvantaged and marginalised communities.
- Promotion of a healthy academic culture of knowledge sharing.
- Enhancement of educational opportunities to foster development and knowledge societies.
- Promotion of the open creation and distribution of Bengali language knowledge around the world.

Bangladesh has several related and supporting policies that are helpful in strengthening OER policy. Some of these are:

- Copyright Act, 2000 (Act No. XXVIII of 2000, as amended up to 2005) (2005)
- Cyber Security Policy, 2010
- ICT Master Plan in Education, 2012–2020
- ICT Policy, 2015
- National Curriculum and Textbook Board Ordinance, 1983 (Ordinance No. LVII of 1983) (1983)
- National Education Policy, 2010
- Patents and Designs Act (Act No. II of 1911) (2003)
- Right to Information Ordinance, 2008 (2008)
- Trademarks Act, 2009 (Act No. XIX of 2009) (2009)
- Vision 2021

3. DEFINITIONS OF RELATED TERMS

In this policy, the following definitions are used:

- (1) “Intellectual property (IP)” refers to the exclusive rights, including economic and moral rights, arising from creative works developed to support teaching and learning.
- (2) “Outputs” are the tangible products created by an individual or group of individuals — for example, course design documents, learning materials, curricula and learning activities expressed in any tangible form, including print, video, audio and digital formats.
- (3) “Outcomes” are the consequences and benefits which may arise from the development of, or use of, IP — for example, strategic collaborations or monetary return on IP.
- (4) “Copyright” is the subsection of IP law which grants original creators (authors, musicians, artists and other creators) and owners (by virtue of creative works produced in the course of employment) the rights of ownership and protection against unauthorised use of their works for a fixed period.
- (5) “Licences” refers to the legal mechanisms and tools for copyright holders to grant permission and/or specify conditions for the use of their copyrighted works.

- (6) “Open educational resources (OER)” are teaching, learning and research resources and materials in any medium, digital or otherwise, used to support education/training/research which reside in the public domain or have been released under an open licence that permits zero-cost access, reuse, revision, remixing, retention and redistribution by others with no or limited restrictions.
- (7) “Open licence” is a type of licence that grants permission to access, retain, reuse, revise, remix and redistribute a work with few or no restrictions.

4. AREAS OF RESPONSIBILITY

As responsible authorities, the Ministry of Education (MoE) and the Ministry of Primary and Mass Education (MoPME) of Bangladesh shall promote and foster the adoption of OER as a matter of priority, recognising the emergence of OER as a means to increase access to educational/training resources at all levels and ensure quality education/training in Bangladesh. Along with these two agencies, the University Grants Commission (UGC) and other directorates will work collaboratively to promote OER policy. A standing committee will look after OER policy implementation and will resolve disputes in this regard.

5. SCOPE OF THE POLICY

The policy shall be applied to all publicly funded teaching and learning materials developed by various ministries of the Government of Bangladesh and their subordinate offices. Educational/research institutions and autonomous bodies developing teaching and learning materials using public funds will be guided by this policy and shall undertake appropriate steps to adopt OER. Also, any private university, institution or organisation which develops any educational resource using public funds, donor-provided funds or their own funds shall be encouraged to apply the policy. However, in all cases, the release of works under an open licence will follow the Copyright Act, 2000 (Act No. 28 of 2000, as amended up to 2005).

6. SPECIFIC POLICY OBJECTIVES

- 6.1 To formulate the necessary strategic inputs, outputs, tasks and performance indicators to achieve OER integration in teaching and learning at all levels of education, in coherence with the national and institutional curriculum requirements.
- 6.2 To take measures for raising awareness, building capacities and developing positive attitudes amongst all stakeholders towards the concepts and practices related to OER.
- 6.3 To prepare guidelines and manuals for OER use, creation, integration and licensing at the institutional level.
- 6.4 To establish an OER repository containing openly licensed materials created by educators and learners at national and institutional levels.
- 6.5 To provide an enabling environment, including the required infrastructure, hardware, software, Internet connectivity and new technologies, for effective OER creation/integration at the institutional level.
- 6.6 To ensure that the implemented policy is monitored by incorporating a feedback mechanism that will enable the MoE, MoPME and UGC to take informed decisions regarding any necessary revisions arising from changing requirements in the national education system and international developments in the field.

7. POLICY STATEMENTS

7.1 General

- 7.1.1 The MoE, MoPME and UGC shall be committed to the philosophy of OER in raising awareness, building capacity and fostering positive attitudes in educators and learners regarding the development and use of OER, with a view to enhancing quality and equity in education.

- 7.1.2 As educational resources that are freely and openly available, OER shall be used by educators and learners in the production of teaching and learning materials to meet institutional and national curriculum requirements.
- 7.1.3 The government shall be committed to investing in materials development and curriculum design on a regular basis and to encouraging the creation of high-quality, openly licensed learning resources to improve the quality of teaching and learning.
- 7.1.4 Besides educators and learners, educational institutions should be encouraged to pool and share resources in order to develop OER. Further, the state will encourage institutions to incentivise materials-development activities in different ways to reward collaborative activity and encourage the production of new materials.
- 7.1.5 The existing enabling environments for ICT — including infrastructure, Internet connectivity and emerging technologies such as mobile technology — shall be fully utilised to facilitate access to and redistribution of openly licensed teaching and learning resources.

7.2 Copyright and Licensing

- 7.2.1 All teaching and learning materials developed with public funds shall be released with an appropriate open licence and made available online, in editable digital formats, to the public.
 - 7.2.1.1 Teaching and learning resources will be openly licensed when the copyright of the work is held by the concerned ministry, department or educational institution.
 - 7.2.1.2 Teaching and learning resources will be openly licensed when created by a grantee or contractor receiving public funds from a ministry, department or educational institution.
- 7.2.2 The preferred open licences are the most current versions of the Creative Commons Attribution (CC BY), Creative Commons Attribution-ShareAlike (CC BY-SA), Creative Commons Attribution-NonCommercial (CC BY-NC) and Creative Commons-NonCommercial-ShareAlike (CC BY-NC-SA) licences.
- 7.2.3 Agencies of the government will reserve their right to license their copyrighted work using the most current version of the Creative Commons Attribution-NoDerivatives (CC BY-ND) and/or Creative Commons Attribution-NonCommercial-NoDerivatives (CC BY-NC-ND) licences under the following conditions:
 - 7.2.3.1 Where any derivative would affect the reputation of the agency or the integrity and authenticity of the work (CC BY-ND is suggested).
 - 7.2.3.2 Where the derivative or otherwise commercial circulation of the work would adversely affect the agency's operation and economic viability.

7.3 Exceptions

- 7.3.1 The OER policy would not apply to any work if releasing the work under an open licence would:
 - 7.3.1.1 be contrary to legislation, court order or specific government policy;
 - 7.3.1.2 constitute a breach of contract or lead to disclosure of a trade secret; and/or
 - 7.3.1.3 prevent the patenting of an invention.

8. STRATEGIES

- 8.1 Institutions engaged in curriculum design and materials development at all levels of education shall be encouraged to invest resources in the production and sharing of high-quality, openly licensed educational resources and the ongoing improvement and updating of curricula and teaching materials.
- 8.2 A national scheme will be initiated for teachers to be recognised and rewarded for collaboration and sharing in the creation of new OER, as well as the adaptation of existing OER.
- 8.3 Advocacy and capacity building for copyright and open licensing will be supported at the national level.
- 8.4 The MoE shall be responsible for: establishing and maintaining a national repository for OER; establishing quality assurance mechanisms, such as peer review or user ratings; capacity building in OER development amongst educators; and ensuring the open licensing of educational materials that are developed.

- 8.5 The commitment of the MoE, MoPME and UGC towards making available selected educational materials as OER through a dedicated web portal for the greater good of the community will be ensured.
- 8.6 The development of supplementary educational material through the reuse and repurposing of available OER will be encouraged, incentivised and monitored nationally and institutionally.
- 8.7 The provision of physical, human, financial and other relevant resources necessary for the implementation of the OER Policy will be introduced.
- 8.8 Policy statements at the MoE, MoPME and UGC levels on the alignment of copyright with their commitment to OER adaptation and implementation at the institutional level will be confirmed.
- 8.9 The affiliated agencies of the MoE, MoPME and UGC shall facilitate the implementation of the OER Policy by working closely with individual institutions.
- 8.10 The MoE shall be the absolute owner of the copyright of any supplementary educational material/content created by individuals with public funds and will make them available as OER in accordance with the national OER Policy.

9. CREATIVE COMMONS LICENCES

Licence Name	Acronym	Icon	Description
Attribution	BY		This licence lets others distribute, remix, tweak and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licences offered, in terms of what others can do with your works.
Attribution-ShareAlike	BY-SA		This licence lets others remix, tweak and build upon your work even for commercial reasons, as long as they credit you and license their new creations under the identical terms. This licence is often compared to open-source software licences. All new works based on yours will carry the same licence, so any derivatives will also allow commercial use.
Attribution-NonCommercial	BY-NC		This licence lets others remix, tweak and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.
Attribution-NonCommercial-Share Alike	BY-NC-SA		This licence lets others remix, tweak and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. Others can download and redistribute your work, just as under the BY-NC-ND licence, but they can also translate, make remixes and produce new stories based on your work. All new work based on yours will carry the same licence, so any derivatives will also be non-commercial in nature.

Licence Name	Acronym	Icon	Description
Attribution-NoDerivatives	BY-ND		This licence allows for redistribution, commercial and non-commercial, with credit to the author. The work may not be altered, transformed or built on.
Attribution-NonCommercial-NoDerivatives	BY-NC-ND		This licence is the most restrictive of the six main CC licences, allowing redistribution only. This licence is often called the “free advertising” licence because it allows others to download your works and share them with others as long as they mention you and link back to you, but they cannot change them in any way or use them commercially.

Source: <https://creativecommons.org/licenses/>



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