How Does Digitization Impact on the Formation of Bangladeshi Learners' Interpersonal Skills?

HOW DOES DIGITIZATION IMPACT ON THE FORMATION OF BANGLADESHI LEARNERS' INTERPERSONAL SKILLS?

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Abstract

The study envisages as certaining whether the initiatives embraced by Higher Education Institutions (HEIs) have impact on the formation of the interpersonal skills among the learners in Bangladesh or not. Considering cross sectional approach as research method and incorporating self-administered questionnaire as research instruments, a total of one hundred respondents (i.e. students and educators), chosen by the judgement of the researchers, from sixteen HEIs of Bangladesh were surveyed. The survey data were analyzed through a structured equation modeling simulation, namely SMART PLS 2.0. At first, all scales, which were adopted from prior studies and reworded to fit into the context, were validated using the standard indicators followed by the process of testing hypotheses. Empirical evidence revealed that behavioral factors: interactivity, collaboration, self-efficacy impacted positively on the development of learners' interpersonal skills, such as teamwork, critical thinking, problem solving, and persuasion. However, the study also found some factors: cost, lack of training facility, poor infrastructure, high level of plagiarism, and lack of motivation, which were manifested as obstacles to digital transformation in HEIs in Bangladesh. Result of the study may provide educators and policy makers with a solid base for setting up e-learning within the institution and explore the main areas of improvement that should be taken into consideration. The study has also contributed to the existing literature unfolding behavior related to the development of professional skills.

Keywords : Digitization, Distance Learning, Education Technology, HEIs, Interpersonal Skills

1. INTRODUCTION

It has been elucidated that the education system of a country is the key to basic development. Unlike other developing countries, Bangladesh is also facing enormous challenges in shaping its massive population into skilled workforce because of poor infrastructure, lack of finance, and appropriate methods. Since its inception, the government of Bangladesh has made several attempts to implement some visible initiatives. As such, many strategies and techniques have been initiated and implemented to provide quality education, but the system, nevertheless, struggles to fulfill the desires of Bangladeshi population as it struggles to produce

skilled graduates; eventually, considered as outmoded. As compared to global level of education, Bangladeshi education system has not always been as competitive as other Asian countries.

Due to various challenges- including lack of high-quality instructors and modern facilities, outdated syllabi, lack of computers and lab facility, insufficient infrastructure, lack of fund and comprehensive policies, etc., which have threatened the expected outcomes, the country is striving to set up a proper knowledge-based and skills-based education system. On the other hand, developed countries' education systems travel far way with the help of technologies in a form of e-learning or distance learning. One of the most accepted technologies is posited as 'Information and Communication Technology (ICT)', which has proven to be quite effective easing administrative and academic maneuvers; concurrently, drawn much attention by both the educators and policy makers across the world.

In Bangladesh, as of late, some technologies such as distance learning, e-learning, computer, internet and intranet-based technologies are currently being used in a scattered manner and limited way, but the potentialities of technology in generating skills (i.e. interpersonal, technical, communication, problem solving) are still untapped and, to some extent, totally unexplored. In addition, some universities have already implemented several vendor-supported modules, such as Google classroom, Moodle, along with some locally coded platforms, i.e. VUES (Virtual University Expert System), Education ERP, which have proven to be quite fruitful in attaining institutions' core objectives.

Incorporating e-learning or distance learning for embracing modern academic administration is the key to ensuring the equal possibility of learning, expanding worldwide connectivity of the educational institutions, giving education for distanced and distressed people, etc.Yet, e-learning is not intended to replace the traditional educational setting rather it provides opportunities for academic collaboration (Masrom, 2007). An empirical study found that peer assisted learning, which includes examination of videotape, has impacted great on the development of clinical skills among the medical students (Field, Burke, McAllister, & Lloyd, 2007).

The impact of computer assisted learning on clinical skills education has been reviewed interactively narrating several dimensions: using computer assisted learning for clinical skills education in nursing, impact of CAL on cognitive recall, impact of CAL on knowledge and skill retention, effect of CAL on skill performance (Bloomfield, While, & Roberts, 2008). The Bangladesh education ministry (MoE) in association with University Grant Commission (UGC), and Bangladesh Research and Education Network (BdREN), etc., shows akeen interest to ease the education system, considering as one of their top priorities, by enticing the HEIs in utilizing the essence of ICTs. So far, couple of programs and projects have been set up to facilitate and assist the beneficiary, i.e., educators, learners with a view to acquiring a fair and proper level of education, regardless of gender, class, socio-economic status.

The existing literature sheds light on the issues: success factors of e-learning acceptance in HEIs (Selim, 2007), benefits of ICTs and barrier to ICTs in HEIs (Ali & Magalhaes, 2008; Mapuva, 2009; Mapuva & Muyengwa, 2009), importance of ICTs in shaping education (Ferdig, 2006; Wagner, Hassanein, & Head, 2008), behavioral intention to adopt ICTs in HEIs(Lwoga, 2012; Masrom, 2007), student satisfaction in using ICTs in HEIs(Liaw, 2008; Wu, Tennyson, & Hsia, 2010), but whether the initiatives of setting up techno-based learning atmosphere are enhancing learners' interpersonal skills; concurrently, making them more competent for the ever growing and challenging job market or not, is remain unexplored as few studies have been conducted to unveil the issues.

Hence, the study aims to ascertain the utilization of digital technologies in enhancing interpersonal skills of learners. Therefore, the study has twofold objectives :

    1. To identify the determinants associated with the utilization of the digital technologies in enhancing learners' interpersonal skills.

    2. To explore the possible obstacles which may impede the incorporation of the digital technologies in HEIs.

By incorporating some measurements, this study is spearheaded to answer the following research question:

RQ1 : Do the initiatives of implementing ICTs in HEIs significantly enhance learners' interpersonal skills?

2. LITERATURE REVIEW

2.1 Digitization in HEIs in Bangladesh

Learning is an aim-oriented system that hinges on new learning mechanism, modifying and strengthening existing information. To accrue diverse types of information, students' competencies, behaviors, values, or inclinations may additionally be involved (University, 2018). Learners of Bangladesh are still spending plenty of time paying attention to what teachers are imparting and intended to deliver in a class room setting. The educator is the center of the class, and this is the tradition of Bangladeshi educational environment. If instructors experience difficulties in delivering educational contents or materials, educational reformation will somehow experience a sharp decline. Such situation affirms the reality that both teacher and student must have logical control over what occurs in the class (Sarason, 1996).

Technology will assist the instructor in growing and establishing a supportive learning environment and additionally transiting from the position of facilitator to a scholar. The teacher himself learns as well as assists the students to learn (Ranasinghe, Vidanapathirana, Rajamanthri, Gamini, & Bullumulle, 2009). Students can learn, analyze information at anytime and anywhere by using latest technologies. With the help of e-learning anyone can get rudder from experts, get or deliver just-in-time direction (ASAD, 2010). The key benefit to students is its trouble-free entrance

(Mannan, 2015). To enhance distance education, e-learning is extensively utilized in most of the developed nations. Basically, e-learning encompasses web-based learning, computer-based learning, digital lecture rooms and virtual collaboration, where contents are introduced via internet, intranet or extranet, audio and video tape, satellite television and CD-ROM (Islam, 1997).

Cloud computing-based e-learning provides knowledge anytime, anywhere and on any device to have a learning experience and it will benefit every students, faculty members, administrators and researchers in higher education institutes. Complex thinking skills will be developed by using technology in Higher education system (Ohler, 2005). Internet-based activities such as e-mail, blogs and Facebook have been proven useful in developing students' English skills (Ardi, 2012).

2.2 Usefulness, Benefits, Challenges of ICTs in HEIs

Researchers are always have keen to study different dimensions and changing role of ICT both from the educator and learner perspective (Kirkup & Kirkwood, 2005) as well as the impact of ICTs on higher education together with potential future developments (Oliver, 2002). ICTs in education are getting much more widespread in HEIs in which learners and educators are frequently sharing knowledge, incorporated in resolving various issues with respect to academia, regardless of the challenges posed by inadequate adoption, implementation, lack of infrastructure, culture and management (Yasemin et al., 2008). Besides, web based learning platforms are proven to be quite effective as it has been adopted by the majority of the faculty members for supporting and improving day to day academic activities (Lockyer, Patterson, & Harper, 2001). Despite the enormous benefits ICTs in academia in resolving problems, some opportunities and challenges are also addressed by the author (Tynjälä & Häkkinen, 2005).

ICTs are used as supporting tools for coordinating activities so as to foster the process of internationalization (Thune & Welle-Strand, 2005). Through the appropriation of ICTs in HEIs, teachers and students can get inspired and encouraged for sharing resources (Tsungjunag, 2009) with which interactive learning environment, students' training, teachers' beliefs can be fostered (Sofia Balula, Jos, xe, & Alves, 2014). E-learning is useful as it serves several benefits and highly admired by the learners and educators despite numerous challenges and barriers to adopt it. Overall, academic staff in HEIs shows positive attitude towards e-learning (Akaslan & Law, 2011). The main challenges encountered by the education enterprise is to attract learners to the e-learning services (Liao & Lu, 2008).

2.3 Classical Theories in Explaining Acceptance and Adoption Behavior of ICTs

As e-learning is becoming much popular among the learners and educators, the adoption and acceptance behavior of e-learning has widely been explored proposing several theoretical models, such as technology acceptance model (TAM) (Davis, 1993; Lee, 2006), unified theory of acceptance and use of technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), Technology Readiness Index (TRI)

(Parasuraman, 2000), etc. Despite its several visible benefits, ICTs have not reached its full potential (Bloomfield et al., 2008). However, some factors: personal demand (Zhang, Wen, Li, Fu, & Cui, 2010), perceived usefulness (Liao & Lu, 2008), perceived ease of use (Tarhini, Hone, & Liu, 2013) have been unveiled, which have recorded a positive influence on learners adoption process.

3. METHODOLOGY

3.1 Questionnaire and Sample

The study, mainly, adopted cross-sectional research technique with which one hundred respondents were surveyed randomly using self-administered questionnaire comprising thirty categorical questions (divided into four categories) in a 5-point Likert scale ranging from strongly agree to strongly disagree. The respondents of the survey were, primarily, learners learning in and educators serving for various academic institutions in different Universities/HEIs of Bangladesh. All respondents were approached personally with the self-administered and structured questionnaire. The Items used in the questionnaire were, mainly, adopted from prior studies related to the scope of the research. All Items of the questionnaire were reworded to fit into the research context.

3.2 Measurements

The study incorporated four constructs: collaboration, interactivity, self-efficacy, interpersonal skills. Each variable comprising several items coded in a 5-point Likert scale ranging from strongly disagree (1) to strongly agree(5). The indicators of the study are as follows:

1. Collaboration : Collaboration can be defined as "the extent of problem solving through support and integration and the extent of open and authentic communication." (Banker, Bardhan, & Asdemir, 2006).

2. Interactivity : Interactivity can be defined as "the ability to customize the site's look, feel, and content as well as provide interaction with the user." (Palmer, 2002).

3. Self-efficacy : Self-efficacy can be defined as "a student's perceived capability to use a variety of self-regulated learning strategies." (Zimmerman, Bandura, & Martinez-Pons, 1992).

4. Interpersonal skills : Interpersonal skills can be defined as "the ability of understanding and motivating people." (Ruderman, Ohlott, Panzer, & King, 2002)

3.3 Data Analysis

A total of 100 respondents' data collected from sixteen universities, including private and public universities, were analyzed using structural equation modeling simulation, namely SMART PLS 2.0, which is complete PLS based SEM simulation invented by the author (Henseler, Ringle, & Sinkovics, 2009). According to Goodhue, Lewis, and Thompson (2012), "PLS is as effective as other statistical techniques in detecting

actual paths, and not falsely detecting non-existent paths when analyzing small sample sizes or data with non-normal distributions". Conversely, the study incorporated three independent variables and a single dependent variable; so, if we incorporated Multiple Regression statistical technique, we would need only 74 samples in order to generalize result of the study (Tabachnick, Fidell, & Ullman, 2007).

At the initial level, all scales used in the study were validated using the indicators: AVE, Composite reliability, Cronbach's Alpha, etc.; likewise, correlations were checked, and hypotheses were tested using the indicators, i.e., Beta coefficient, T-statistics, P-value. Throughout the study, necessary materials were collected from institutions such as the University Grant Commission (UGC), Bangladesh Research and Education Network (BdREN), etc. as well as online directory.

4. FINDINGS AND ANALYSIS

4.1 Demographics of the Respondent

Respondents of the study are primarily educators (23%) and learners (77%) of different public and private universities in Bangladesh. Majority (57%) of the respondents are male and the rest (43%) are female, who are currently enrolled or employed and actively using various e-learning platforms available in those universities.

4.2 Institutional Strengths of the Academic Institutions in Bangladesh

In order to provide more authentic and viable result, institutional capabilities were also measured by asking several general statements. As shown in table 1, it can be strongly stated that the institutions chosen for the survey were well structured and fitted with various ICTs.

Table 1: Institutional Capability

Statements	Yes	No
Does your institution's classrooms have multimedia facility (computers, projectors, internet, etc.)?	94%	6%
Do you have access to library resources or course content online?	72%	28%
Does your university have laboratories with modern devices, machines, equipments & technologies?	95%	5%
Do you use electronic devices: cellphone, e-mail, instant messages for communicating with your peer?	94%	6%
Are lectures/presentations conducted using technology?	92%	8%

Source : Estimated Result

As shown in table 1, it can also be posited that the vast majority (94%) of the respondents disclosed that their institutions were equipped with multimedia facilities and all lectures or presentations were conducted using technology. Approximately 72% of the respondents can have access to various library resources available.

Institutions chosen for this study were well equipped with modern laboratories, including devices, machines. Nearly all (94%) the respondents confirmed the existence of various forms of technologies in their institutions through which both students and teachers are well connected.

4.3 Analysis of the Measurement Model

Table 2 showcases the factor loadings of all fifteen indicators, finally used in analyzing data. It can be stated that the loadings are above the standard cutoff point (Chin, 2010). However, two of the indicators: ILP3, ILP4 were eliminated due to poor factor loadings. In the collaboration block, IC1 has got the highest loading, followed by IC3 (0.82), but IC2(0.561) has got the lowest loading among all. However, all loadings in this block are above the threshold of 0.50. In the interactivity block, of seven statements, two statements got eliminated because of not exceeding the standard cut-off point of 0.50. Out of five statements, ILP6 loaded the highest, followed by ILP5 (0.797).

Table 2 : Measurement Model

Model Construct	Items	Item Measure (Statement)	Loadings	Alpha (α)
Collaboration (Banker et al., 2006)	IC1	Digitization of higher education system increases teacher-student interaction & collaboration.	0.833	0.6076
	IC2	Digitization of higher education system develops communication between educator and learner.	0.561	
	IC3	Digitization of higher education system eases the academic pressure of teacher and students through effective collaboration.	0.820	
Interactivity (Palmer, 2002)	ILP1	Online based learning simplifies the learning process.	0.565	0.6771
	ILP2	Online based learning resources and contents are easy to obtain.	0.570	
	ILP3	Online based learning is learner-centered. *(Eliminated due to poor factor loading)*		
	ILP4	Online based learning platforms use different methods to enhance student performance. *(Eliminated due to poor factor loading)*		

Model Construct	Items	Item Measure (Statement)	Loadings	Alpha (α)
	ILP5	Online based learning will increase the engagement of students into the lectures.	0.683	
	ILP6	Online based learning helps students to maintain attention in the class.	0.797	
	ILP7	Online based learning helps to improve course material or lecture contents.	0.809	
Interpersonal Skills (Ruderman et al., 2002)	SKE1	Digitization of higher education system increases the IT related skills of students and teachers.	0.556	0.5464
	SKE2	Academic success (Grades, Performance, etc.) rates become higher due to digitization.	0.713	
	SKE3	Digitization simplifies all administrative related activities such as online registration, add/drop course, upload/download course contents, assignment submission, receive grades etc.	0.629	
	SKE4	Technologies used in higher education institutions improve a student's career or employment opportunities in the long run.	0.674	
Self-efficacy (Vohs, Baumeister, & Ciarocco, 2005)	SE1	Nowadays, students are acquiring knowledge from different sources, which increases competition among them.	0.794	0.6344
	SE2	Nowadays, students can understand complex subjects or topics via video lectures in classrooms.	0.625	
	SE3	Digitization in higher education system motivates students to get involved in different learning, analytical & research-oriented activities.	0.840	

Source: Estimated Result

In addition, IPL1 and ILP2 are loaded 0.565 and 0.570, respectively. The construct 'interpersonal skills' were measured using four statements. The block shows that the variable 'SKE2' (0.713) got the highest loading followed by SKE4 (0.674). Finally, three statements were used to measure the variable 'self-efficacy' in which the variable 'SE1' (0.794) scored higher than the remaining two variables: SE2 (0.625), SE3 (0.840).

4.4 Reliability and Validity Analysis of the Scales

Reliability analysis of the scales used in this study was done using some statistical measurements (i.e. AVE, Composite reliability, Cronbach's Alpha, etc.). As shown in table 3, it can be well stated that the two of AVE (Average Variance Extracted) values are well above the cutoff point of 0.5, and the rest are below the standard cutoff point (Hair, Ringle, & Sarstedt, 2011).

Table 3 : Reliability and Validity Analysis

	AVE	Composite Reliability	R Square	Cronbach's Alpha	Communality	Redundancy
Collaboration	0.5602	0.7878	0.0000	0.6076	0.5602	0.0000
Interactivity	0.4029	0.7733	0.0000	0.6771	0.4029	0.0000
Interpersonal Skills	0.4172	0.7396	0.4123	0.5464	0.4172	0.0753
self-efficacy	0.5755	0.8003	0.2985	0.6344	0.5755	0.1308

In addition to the AVE, all calculated composite reliability values are well above the cutoff point of 0.6 (Hair et al., 2011). Hence, it can be concluded that the proposed questionnaire items are reliable and dimensional.

4.5 Correlations Analysis of the Latent Constructs

Table 4 confirms the significant positive relationships among the pairs of the variables: Collaboration and Self-efficacy (0.5043); Interactivity and Self-efficacy (0.4537); Self-efficacy and Interpersonal Skills (0.5292); Collaboration and Interpersonal Skills (0.5242); Interactivity and Interpersonal Skills (0.5242).

Table 4 : Latent Variable Correlations

	Collaboration	Interactivity	Interpersonal Skills	Self-efficacy
Collaboration	1.0000			
Interactivity	0.5521	1.0000		
Interpersonal Skills	0.5242	0.5202	1.0000	
Self-efficacy	0.5043	0.4537	0.5292	1.0000

It can also be postulated that the calculated strengths are marked as "high"(Ratner, 2009). To know the significant influence that one variable has on other variable along

with effect size, we, therefore, measured t-statistics and path coefficients, which are presented below.

4.6 Analysis of the Structural Model

The below figure 1 shows that almost 30% variance in self-efficacy ($R^2 = 0.296$) is shared by the variables: collaboration and interactivity. Additionally, the three variables, i.e., collaboration, self-efficacy, interactivity together account for nearly 41% variance of the variable interpersonal skills ($R^2 = 0.411$).
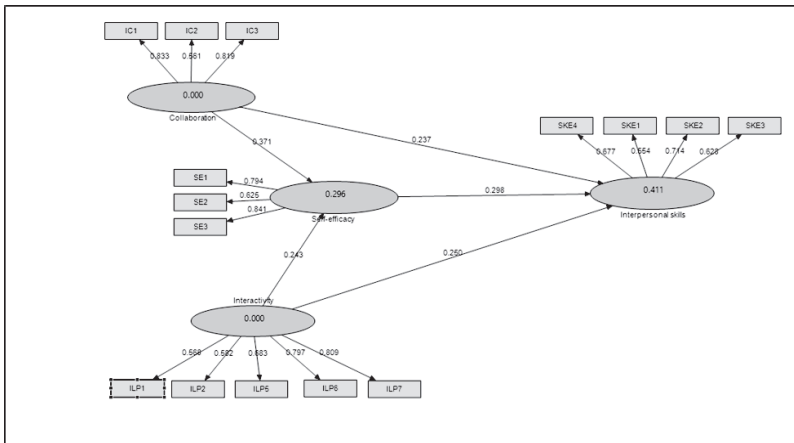
Source: Simulation Output

Figure 1: Research Model

Out of the three variables: collaboration, self-efficacy and interactivity the variable 'self-efficacy ($\beta = 0.298$)' has the highest impact on the dependent variable (interpersonal skills), followed by the variables: collaboration ($\beta = 0.237$) and interactivity ($\beta = 0.250$).

4.7 Structural Equations

The following are the equations, which have been derived from the research model portrayed above.

Self-efficacy = $\gamma 211$(Collaboration) + $\gamma 12$ (Interactivity) + $\epsilon 1$..................................... (1)
Interpersonal skills = $\beta 21$ (Self-efficacy) + $\gamma 21$ (Collaboration) + $\gamma 22$ (interactivity) + $\epsilon 2$ ... (2)

Notes :
   γ= Gamma (predicted variable)
   β = Beta (path coefficient)
   ϵ = Epsilon (standard error)

4.8 Test of Hypotheses

Based on the evidence depicted in the table 5, it can be posited that the five hypothesized paths: Collaboration and Interpersonal Skills (β=0.2275, t=2.3959,

p<0.05); Collaboration and self-efficacy (β=0.3648, t=3.2034, p<0.05); Interactivity and Interpersonal skills (β=0.2789, t=2.4077, p<0.05); Interactivity and self-efficacy (β=0.2783, t=2.5924, p<0.05); self-efficacy and Interpersonal skills (β=0.2999, t=2.8408, p<0.05) are statistically significant.

Table 5 : Analysis of the Hypotheses Used in the Study

Hypothesized Paths	Original Sample (O)	Standardized β	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/ STERR|)	Decision
Collaboration ->Interpersonal skills	0.2334	0.2275	0.0974	0.0974	2.3959	Supported
Collaboration -> self-efficacy	0.3651	0.3648	0.1140	0.1140	3.2034	Supported
Interactivity ->Interpersonal skills	0.2577	0.2789	0.1070	0.1070	2.4077	Supported
Interactivity -> self-efficacy	0.2521	0.2783	0.0972	0.0972	2.5924	Supported
self-efficacy ->Interpersonal skills	0.2946	0.2999	0.1037	0.1037	2.8408	Supported

4.9 Main Obstacles to Digitization

In the third segment, all respondents were asked to state the barriers to digitization. The main obstacles are categorized as cost, lack of training, insufficient infrastructure, plagiarism, lack of motivation, inadequate support, assessment etc. As shown in table 6, the vast majority (90%) of the respondents indicated 'plagiarism' as the main impede to digitization for HEIs in Bangladesh. Because, the use of technologies (i.e. internet, email, e-learning) increase tendency to copy academic contents from various online sources, which may hinder the entire education system.

Table 6 : Obstacles to Digitization

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Plagiarism is the main obstacle to digitization of higher education system	1%	9%	26%	34%	30%
Digital technology in higher education system is costly to setup and difficult to maintain in terms of time and resources.		4%	11%	60%	25%

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Do you think more technical support is needed from the university authority to incorporate digitization perfectly?		3%	1%	46%	50%
Do you think e-learning/distance learning is important at your university?		5%	26%	73%	100%

Almost all (96%) of the respondents stated that incorporation is important, but it may require enormous investment, which may not be supported by the stakeholders. The following are the obstacles to digitization in HEIs, which have been outlined through the study.

- Lack of fund to integrate technologies as it is considered costly and requires skilled personnel.
- Inadequate IT networking infrastructure.
- Lack of advanced devices and modern laboratory facilities.
- Quality of education in HEIs is not monitored properly.
- Research facilities are not adequately developed in most universities.

5. CONCLUSION

Bangladesh desires to gain the scopes offered by globalization to make a knowledge-based society. The education structure of Bangladesh is broadly separated into three tiers: primary, secondary and higher education (tertiary). The government of Bangladesh has a huge responsibility to fulfill the requirements of the education system of the country. From the beginning, after independence, the government of Bangladesh is trying to do her job. The higher education system of Bangladesh has been going through deep challenges. To improve the quality of our educational system and research-based society, Bangladesh has to face challenges regarding planning, inadequate fund, and monitoring capacity. All these drawbacks can only be removed by revealing a quality culture and ensuring excellent practices in higher education institutions (HEIs).

The salient aim of this report was to explore the situation of incorporating digitization by the higher education institutes (HEIs) of Bangladesh and its impact on developing interpersonal skills of learners. We have found some encouraging and cheerful insights about digital education system and the roles of digital education in driving skills. Information technologies are spearheaded to support HEIs to become more inventive and proactive to the changing needs of students and educators. Nonetheless, some issues regarding digitization were identified, which may speed up the transformation process if implemented by the HEIs. Relatively, all HEIs of Bangladesh possess strong vision in incorporating ICTs; in fact, several institutions are in a process of incorporating ICTs for strengthening up the administrative and academic activities at present.

Some of the HEIs have well facilitated classroom with all the modern amenities. Surprisingly, students and educators are constantly using them without having strong IT/IS related skills. The study confirmed the formation and enhancement of interpersonal skills among the learners through the appropriation of ICTs, which is much required by the industry. In order to foster interpersonal skills among the learners through proper engagement of ICTs, three factors such as collaboration, self-efficacy, and interactivity should be stressed on.

The study also aimed at identifying factors enhancing learners' interpersonal skills making them more competent in dealing with daily task assigned by the corporate supervisor. The study incorporated three predictor variables and one predicted variable to form a framework, which was also validated empirically. The study found significant positive relationship between predictor and predicted variables. Information technology is very much important in higher education system as it enhances learners' skills and make them more competent. If the education segment practices ICTs in all aspects, learners will become skillful enabling them to be more active, which may help them to create competitive position in the market. As a result, expert, capable and qualified manpower can be produced.

Bangladesh has already taken various steps to employ and set up technology-based nation. Higher education sector is given supplementary consideration to be equipped with ICT applications. Internet facility is provided to higher education institutes. Telecommunication and networking infrastructure via optical fiber is being deployed throughout the country. The study also found some limitations, such as inadequate IT networking infrastructure, lack of neoteric devices, modern labs, connectivity problem, lack of comprehensive plans and efforts etc. making the transformation process a bit complicated. The study confirmed that utilization and appropriation of ICTs in HEI has greater impact on the enhancement of necessary skills of a graduate. The learners and educators of Bangladesh would be able to enhance skills for responding to any positive and negative changes and challenges of this fast-growing century if the higher education institutions were digitalized.

Immediate measure should be taken to establish proper ICTs backbone for HEIs so that it can further contribute to the enhancement of necessary skills, which is much needed at this moment in Bangladesh. Analyzing critically, the existing situation of digitization in higher education sector and to create competent graduate, some recommendations have been drawn. These are as follows:

- Networking infrastructure should be developed in all higher educational institutes.
- Adequate computer lab facility, applications should be ensured as early as possible.
- Cheap internet connectivity should be expanded horizontally. University should be given connection on very minimum charge so that all students will be able to get the internet access to learn more.

- E-learning or distance learning with the help of ICTs should be introduced from the Higher Secondary level.
- Initiatives to collect necessary software should be ensured.

The result of the study confirms a positive impact of the variables : collaboration, interactivity, self-efficacy on learners' interpersonal skills, which provides a framework to the educators, administrators to understand phenomena in favor of introducing e-learning platforms within the institution for enhancing learners' interpersonal skills; also, provides a strategic insights to the institutions, which are fitted with various e-learning platform. Introducing e-learning in an institution may cultivate collaboration, interactivity and self-efficacy, which together may create a positive impact on the enhancement of the necessary skills needed by the industry.

Although the results of the study contribute to the exiting literature, the findings can not be generalized since the results of the study are somewhat based on few institutions. The study may further be extended taking a good number of institutions to examine the moderating roles of 'gender' and social 'influence' in developing skills.

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Appendix A : List of the respondents

University Type	Name of the institution	No. of students	No. of educators
Public	BUET	2	0
	CUET	3	0
	DU	1	0
	RU	2	0
	CU	3	0
	JU	4	0
	KU	1	0
Private	AIUB	27	15
	BM	5	0
	EWMC	4	0
	BRAC	7	1
	AUST	3	5
	EWU	5	2
	NSU	6	0
	IUB	3	0
	UIU	1	0
Total 100 respondents from	16 Institutions comprising	77 Students and	23 Educators