PROFESSIONAL DEVELOPMENT AND PEDAGOGY OF UNIVERSITY TEACHERS IN BANGLADESH: AN EXPLORATORY STUDY

THESIS

Submitted for the award of the Degree of

DOCTOR OF PHILOSOPHY IN EDUCATION

By

MD. ABDUS SALAM

Under the supervision and guidance of

PROFESSOR DR. MD. ABUL EHSAN

Former Director
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INSTITUTE OF EDUCATION AND RESEARCH
UNIVERSITY OF DHAKA
www.du.ac.bd

BANGLADESH

July 2016

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[This study report is submitted to the University of Dhaka for fulfillment of the requirement for the degree of Doctor of Philosophy (Ph.D) in Education]

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DECLARATION

I, **Md. Abdus Salam,** hereby declare that the thesis entitled **'Professional Development and Pedagogy of University Teachers in Bangladesh: An Exploratory Study'** submitted to the Institute of Education and Research, University of Dhaka, for fulfillment of the requirement of the degree of **Doctor of Philosophy in Education,** is an original research work done by me under the supervision and guidance of **Professor Dr. Md. Abul Ehsan.** Neither the whole nor any part of it was submitted to any other degree or diploma. My indebtedness to other researchers and their contribution has been duly acknowledged at the relevant places of the thesis.

Dhaka
10 July 2016

Md. Abdus Salam

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CERTIFICATE

This is to certify that the thesis entitled **'Professional Development and Pedagogy of University Teachers in Bangladesh: An Exploratory Study'** submitted to the Institute of Education and Research, **University of Dhaka,** Bangladesh for the fulfillment of the requirements for the degree of **Doctor of Philosophy in Education** is a record of original research work done by **Md. Abdus Salam** under my supervision and guidance. To the best of my knowledge, this thesis has not been previously submitted to any other university or institution for the award of any degree/diploma or any other similar title. I further certify that the work is worth submitting for the award of the said degree.

Dhaka
10 July 2016

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Md. Abdus Salam

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ACRONYMS AND ABBREVIATIONS

ACR	:	Annual Confidential Report
AIF	:	Academic Innovation Fund
AMFIE	:	Asia Pacific Ministerial Forum on ICT in Education
ASEAN	:	Association of Southeast Asian Nations
A2I	:	Access to Information
BANBEIS	:	Bangladesh Bureau of Educational Information and Statistics
BAU	:	Bangladesh Agricultural University
BB	:	Black Board
BCC	:	Bangladesh Computer Council
BdREN	:	Bangladesh Research and Education Network
BEd	:	Bachelor of Education
BES	:	Bangladesh Educational Statistics
BTRC	:	Bangladesh Telecommunication Regulatory Commission
CBAM	:	Concerns Based Adoption Model
CD-ROM	:	Compact Disc-Read Only Memory
CGI	:	Cognitively Guided Instruction
CK	:	Content Knowledge
CPD	:	Continuous Professional Development
CPDU	:	Continuing Professional Development Units
CQ	:	Creative Question
CREDE	:	Center for Research on Education, Diversity & Excellence
CREEST	:	Center for Research on Evaluation, Standards, and Student Testing
CT	:	Complex Thinking
CT	:	Communication Technology
CTL	:	Center for Teaching and Learning
CU	:	Chittagong University
DES	:	Department for Education and Skills
DOI	:	Diffusion of Innovations
DPED	:	Diploma in Primary Education
DSHE	:	Directorate of Secondary and Higher Education
DU	:	Dhaka University

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EB	:	Electric Board
EFA	:	Education For All
ESL	:	English-as-a-second Language
ESRC	:	Economic and Social Research Council
E-mail	:	Electric Mail
FD	:	Faculty Development
FGD	:	Focus Group Discussion
GDP	:	Gross Domestic Product
GOB	:	Government of Bangladesh
GTI	:	Graduate Training Institute
HE	:	Higher Education
HEA	:	Higher Education Academy
HEIs	:	Higher Education Institutions
HEQEP	:	Higher Education Quality Enhancement Program
HSTTI	:	Higher Secondary Teacher Training Institute
ICARE	:	Introduction ;Connect; Activity; Reflect; Extend
IC	:	Instructional Conversation
ICT	:	Information and Communication Technology
ICTE	:	Information Communication and Technology in Education
ICTs	:	Information and Communication Technologies
ICT-CFT	:	ICT-Competency Framework for Teachers
ICT4E	:	ICT for Education
ID	:	Information Domain
IITE	:	Institute for Information Technologies in Education
ILT	:	Information and Learning Technology
ILTHE	:	Institute for Learning and Teaching in Higher Education
INTASC	:	The Interstate Teacher Assessment and Support Consortium
IPDP	:	Individual Professional Development Plan
ITU	:	Information Technology University
JEPD	:	Job Embedded Professional Development
JPA	:	Joint Productive Activity
JU	:	Jahangirnagar University
KEEP	:	Kamehameha Early Education Program

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KEIRS	:	Korea Education and Information Research Service
KU	:	Khulna University
LAN	:	Local Area Network
LD	:	Literacy Development
LMS	:	Learning Management System
LTSN	:	Learning and Teaching Support Network
MCQ	:	Multiple Choice Question
MOA	:	Memorandum of Agreement
MOE	:	Ministry of Education
MOOC	:	Massive Open Online Course
MPhil	:	Master of Philosophy
NAEM	:	National Academy for Educational Management
NAPE	:	National Academy for Primary Education
NBPTS	:	National Board for Professional Teaching Standards
NCATE	:	National Council for the Accreditation of Teachers Association
NCET	:	National Council for Educational Technology
NCT	:	National Co-ordination Team
NGO	:	Non-Government Organization
NSAPR	:	National Strategy for Accelerated Poverty Reduction
NSDC	:	National Staff Development Council
NSTA	:	National Science Teachers Association
OHP	:	Over Head Projector
PCK	:	Pedagogical Content Knowledge
PD	:	Professional Development
PDAs	:	Personal Digital Assistants
PDF	:	Professional Development Facilitators
PDM	:	Professional Development Model
PDP	:	Professional Development and Pedagogy
PhD	:	Doctor of Philosophy
PIP	:	Professional Improvement Plan
PK	:	Professional Knowledge
PLC	:	Professional Learning Communities
PRSP	:	Poverty Reduction Strategy Paper

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PTI	:	Primary Teachers` Training Institute
OECD	:	Organization for Economic Cooperation and Development
OER	:	Open Education Resources
QAA	:	Quality Assurance Agency
SDN	:	Special Development Needs
SEAs	:	State Education Agencies
SEN	:	Special Education Needs
SICT	:	Support to ICT Task Force
SITES	:	Second Information Technology in Education Study
SPSS	:	Statistical Package for the Social Sciences
RAM	:	Random Access Memory
ROM	:	Read Only Memory
RU	:	Rajshahi University
TCK	:	Technological Content Knowledge
TCT	:	Teaching Complex Thinking
TEIN	:	Trans Eurasia Information Network
TEL	:	Technology Enhanced Lesson
TK	:	Technology Knowledge
TLM	:	Teaching Learning Materials
TLC	:	Teaching, Learning and Computing
TPACK	:	Technological Pedagogical Content Knowledge
TPD	:	Teacher Professional Development
TPK	:	Technological Pedagogical Knowledge
TQEF	:	Teaching Quality Enhancement Fund
TTC	:	Teacher Training College
UGC	:	University Grants Commission
UIS	:	UNESCO Institute for Statistics
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
URC	:	Upazila Resources Centre
USA	:	United State of America
USAID	:	United State Agency for International Development
WB	:	White Board
WSIS	:	World Summit on Information Society

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ABSTRACT

Quality is a problem in higher education, even at both public and private universities in Bangladesh. The quality of teaching depends on the quality of the teachers which, in turn, depends, to some extent, on the quality of their professional development. The objectives of the study were to identify the current status of professional development scopes, to analyze the needs for professional development, to explore pedagogical practices, to ascertain the technological skills and requirements of teachers at universities and finally to propose a Professional Development and Pedagogy (PDP) program model. Therefore, the study integrated both qualitative and quantitative approaches based on social constructivism paradigm to explore the research questions. Triangulation approach has been employed to ensure the validity of data. Purposive and stratified sampling techniques have been followed in sample selection. The total sample size was 540 consisting of teachers (159), students (360) and university education management (21) which had been selected from 5 public universities. Questionnaire, Interview (semi-structure), Focus Group Discussion (FGD) and classroom observation (36) techniques were used for primary data collection. The study found that there were very limited scopes available for professional development of university teachers in Bangladesh. The study indicated that the teachers were proficient on content knowledge but they were unable to assimilate the content from pedagogical perspective. They usually used the traditional teaching methods in a large size classroom because of their lass understanding of the pedagogy. Data also indicated that ICT infrastructure was not available in all classrooms for integrating in teaching practices. The majority teachers have had limited ICT skills resulting less effective teaching learning. Thus, the study identified a strong need of providing PDP program for positive change of teachers' attitude and practices in the classroom. Finally, the study recommended a PDP program model for the university teachers to be used in future.

CHAPTER 1

INTRODUCTION

1.1 Setting the Research Problem

Continuous professional development (CPD) is an important issue for academics, particularly for higher education teachers. This is because unless, and until, university teachers can develop themselves professionally keeping pace with the modern world, they cannot be expected to contribute well to the education of the youth. To be very straightforward, professional development (PD) of tertiary level teachers is necessary not only for the interest of the learners but also for the teachers themselves. However, developing professionally is quite a big challenge for higher education teachers. Because a teacher often needs to go abroad for higher education which requires much time, money and sacrifice on part of him/her. A few academics can manage to do so. Consequently, professional development (PD) remains an unfulfilled dream for many teachers of the university in Bangladesh. Peters (2000) argues:

> *In most countries, universities are faced by unprecedented challenges: rapid technological and societal changes; changes to educational paradigms; the beginning of digitisation of learning and teaching; chronic financial difficulties; the quest for quality and steadily increasing industrialisation, commercialisation and globalisation (p.10).*

In Bangladesh, quality is another problem in university education, even at both public and private. The University Grants Commission (UGC) is the apex body of all the public universities (Government Funded Universities and Private Universities). The underlying principle is that the Government should

not deal directly with the universities, either individually or collectively: instead, it should deal with the UGC which, in turn, deals directly with the universities. This arrangement is designed to safeguard the autonomous character of the universities (UGC Report, 2005). But the UGC has failed miserably in discharging its role as a guardian of public universities and as a promoter of quality university education. It has also failed to institute a self-regulatory accreditation system for private universities (Editor, Alochona Magazine, 2002). According to Ford (1996) all providers of higher education today are faced with the challenge of building a system of quality higher education equipped to meet the needs of society because more profound changes are taking place, changes which seem likely to alter the very nature of higher education. This requires facing challenges and changes collaboratively. But effective teacher education acquires an even more crucial importance, becoming a key factor in ensuring quality education (Dave, 1999). Unfortunately, it is the reality in Bangladesh that there is limited scope of professional development program for university teachers both public and private sector. All the teachers are appointed just after completion of their respective subject degree, at Masters or Ph.D level. As freshers, they have limited ideas on how to deal with the learners, and limited knowledge of the principles of effective teaching, learning and assessment. Furthermore, the teachers require capacity building for coping with the pedagogical and technological changes. In this regard, Aggrawal argued that:

> *'Good education requires good teachers.' It implies that the most capable and appropriate people be recruited into teaching profession, provided with a high quality pre-service programme of teacher education, and then offered opportunities for upgrading their knowledge and skills over the full length of their professional career. It is therefore essential that there is a major reorientation of teacher education to ensure that teachers are furnished with the*

> *necessary knowledge and skills to cope with the new demands placed on them. Teacher education needs to be adequately strengthened and upgraded to accommodate the changing role of the teacher, and so that teachers can effectively address contemporary issues regarding education.* (2000, p.26)

The researcher also strongly believes in the view of Eshiwani (1993, p. 214), who indicated, 'the quality of education is heavily dependent on the quality of staff, their motivation, and the leadership they experience.' Walter et al. (1996, p. 41) also noted that 'the quality of teaching depends on the quality of the teachers which, in turn, depends, to some extent, on the quality of their professional development.' In support of these views, the researcher feels that a professional development and pedagogy (PDP) program can enhance the teaching quality of university education in Bangladesh. In future, the search will be for creative, self-confident, convivial, committed, communicative and socially competent employees (Hohler, 1989). In this situation, universities need to reflect and proceed strategically. Perhaps, now is the time to consider whether universities in Bangladesh need to move away from their traditional methods of teaching and learning. The researcher believes that they must change or they will continue to provide a poor quality of university education. The universities must cope with new tasks and challenges if they are to compete with universities in the western world. What is particularly interesting here is how learning and teaching at university will have to be conceived and organized. The researcher's intention is therefore mainly directed to the required professional and pedagogical processes which are badly needed for university education in Bangladesh. So this study will help exploring ideas professional practices in higher education (HE), identifying current professional development scope, examining practices of teaching and learning, and developing the professional development and pedagogy (PDP) model.

1.2 Background of the Study

There are 37 public universities and 85 private universities in Bangladesh (UGC, 2015). The universities of Bangladesh are functioned under the aegis of University Grants Commissions (UGC). The UGC of Bangladesh was established under the President Order (P.O No. 10 of 1973) of the Government of the People's Republic of Bangladesh which was deemed to have come into force with effect from 16th December 1972. The functions of UGC (Under section 5(1) of the President's Order No. 10 of 1973) as the guardian of universities are to:

- assess the needs in the field of University education and formulate plans for the development of such education;
- determine financial needs of the Universities;
- receive funds from the Government and allocate and disburse, out of such funds, grants to the Universities for their maintenance and development.
- evaluate the program under implementation for development of Universities, teaching departments, institutes and other constituent institutions;
- examine all kinds of University developments plans;
- collect statistical and other information on university matters;
- advise the Government of the establishment of new Universities or on proposals for expansion of the existing Universities;
- advise the Government on proposals to grant the right to confer special degree awarding status on colleges which may be considered suitable for such status;

- exercise such other powers and perform such other functions as may be conferred on it by any law or by the Government;
- under section 5(2) of the P.O. the UGC has the right to visit the Universities or to have them visited by team of experts as and when necessary for evaluating the program and assess their needs and requirements.

The above functions of UGC, appear to indicate that there is little concern about pedagogic training for teachers or quality improvement for university education. However, the UGC does offer very limited options for academic staff development according to needs. Although, the academic staffs get opportunity to develop their own subject areas in a limited range, the development of pedagogical skills are seldom addressed in the universities in Bangladesh. It is recognized that most teacher education programs are closely related to primary and secondary levels of education in the country. The main purpose of these programs is to produce trained teachers for the existing primary and secondary schools of the country. The Government of Bangladesh (GoB) established the Higher Secondary Teacher Training Institute (HSTTI) which has conducted in-service training courses, each of fifty-six days duration, for the college teachers (MoE, 2015). These courses are focused *inter alia* on pedagogy, technological skills, managerial and other issues. There are at present a total of 160 Teachers' Training Institutions in Bangladesh, of which sixty-four are Primary Training Institutes (PTIs) under the Directorate of Primary Education (DPE). Between 1990 and 2015 one hundred and fourteen Secondary Teachers Training Colleges (TTCs) were

established, of which fourteen are funded by GoB including one for female teachers exclusively and one hundred and four are funded privately (BANBEIS, 2014). Five training institutes, attached to TTCs, are established for the training of higher secondary teachers (BES, 2014). However, there is no institution for professional and pedagogic training program at higher education level for the university in Bangladesh. In the primary and secondary sector, Diploma in Primary Education (DPEd) and Bachelor of Education (B.Ed) is mandatory for the teachers within two years of their joining in the profession. A system of incentives with increased salary increments has been set up for teachers at primary and secondary levels. The government and other organizations are concerned to improve the quality of primary and secondary levels of education and teacher training. However, in the last decade of the twentieth century, higher education has changed rapidly in Bangladesh though the quality of academic performance has not been improved accordingly.

The international research shows that professional development is most effective and can impact students' achievement when it is long-term, collaborative, institution-based, focused on the learning of all students, and linked to the curricula that teachers have to teach (Cohen & Hill, 2001; Garet, Porter, Desimone, Birman, & Yoon, 2001; Hiebert, Gallimore, & Stigler, 2002; Wenglinsky, 2000). Institution based PD programs can be designed to extend to a full academic year or even longer because teachers do not need to be removed from classrooms for extended periods in order to participate. Face-to-face sessions can be arranged for teachers' professional development

when teachers can be replaced with substitutes for several days throughout the academic year to attend face-to-face sessions. Alternatively, if these arrangements are not possible, teachers can participate in face-to-face sessions in holidays. In any of these scenarios teachers can continue to participate in the program via online sessions regardless of when the face-to-face sessions are scheduled.

The possibility of arranging blended teacher learning programs that extend beyond an academic year is particularly appealing because the longer a program functions, the more likely deep change will occur in teacher practices (Shields, Marsh, & Adelman, 1998; Weiss, Montgomery, Ridgway, & Bond, 1998). However, collaborative communities might be a hallmark of high quality professional development approach, whether they meet face-to-face (Little, 2003; Louis & Marks, 1998; McLaughlin & Talbert, 2001) or online (Barab, Kling, & Gray, 2004; Koch & Fusco, in press; Schlager & Fusco, 2004). With blended learning, the collaborative possibilities are numerous. For example, teachers within the same university can collaborate in face-to-face sessions that focus on “hands-on” development or review, and then share their thoughts and experiences online as they try out the materials. The online discussions could be with their colleagues in the same university or beyond their university with other teachers engaging in similar activities. The blended model would also appear to support the “critical friends” approach to professional development that aims to increase student learning by creating institution-based teacher communities whose members carry out practice centered collegial conversations (Curry, 2008; Dunne, Nave, & Lewis, 2000).

Therefore, blended learning allows for the possibility of professional development programs to be based in universities to provide opportunities for teachers to share and reflect on their practice.

The notion of learning in one's own physical and social context is considered by many as critical for effective learning (Brown, Collins, & Duguid, 1989; Greeno, Collins, & Resnick, 1996; Lave & Wenger, 1991). Thus blended learning that incorporates institution-based components would appear to be consistent with this situated perspective on learning. Nevertheless, there are limitations if teacher learning is restricted to studying teaching practice within one's own university. Putnam and Borko (2000) argue that teachers need to study in multiple contexts, especially if the goal is for teachers to think in new ways. This is because the pull of the universities' existing environment and culture may be too strong to engender change. Traditionally, seminars, workshops held in locations other than their own university are used to introduce teachers to new instructional ideas.

However, the online component of blended learning can provide teachers access to different contexts in which they can learn. Schools of education, in particular, have long seen continuing professional development of teachers as part of their mandate. In recent years, they have turned increasingly to offering online programs and special projects as a way of partially fulfilling this mandate (Dede, 2006). Research indicates a number of benefits for teachers from online professional development, including anytime/anywhere professional learning (Swenson & Curtis, 2003; Vrasidas & Zembylas, 2004),

instant access to a network of professionals with useful skills and knowledge for continuous training and professional development (Charalambos, Michalinos, & Chamberlain, 2004), and the fostering of a professional learning community (Chapman, Ramondt, & Smiley, 2005). Yet, developers of professional learning programs face significant challenges in organizing and maintaining in university community. Perhaps, the most significant of these is to foster among participants a sense of belonging, trust, and support which are necessary for effective learning in a community (Charalambos et al., 2004). One strategy to address the challenges of community building in online environments is to utilize a blended approach to professional development. This method integrates into the online experience face-to-face components that are intended to strengthen the social cohesion of the learning community and develop a collective momentum for implementing meaningful change in teaching practices.

At present there is an increasing emphasis on teaching exemplified by the statement in the UK Government's White Paper, The Future of Higher Education (Department for Education and Skills, 2003, p. 7): *'Effective teaching and learning is essential if we are to promote excellence and opportunity in higher education. High quality teaching must be recognized and rewarded, and best practice shared'.* The appointment of teaching fellows has been used as a way of increasing the status and quality of teaching in higher education. For example, universities require their teaching fellows to promote learning and teaching, raise the profile of learning and teaching at the universities and improve the quality of the student learning experience. A teaching fellow can be an

exemplar of good practice as well as a contributor to in-house curriculum and staff development activities, and can also be a key player in the implementation of the institution's Teaching and Learning Strategy (Jefferies and Jones, 2002). At a national level within England, the National Teaching Fellowship Scheme established by the Institute for Learning and Teaching in Higher Education (ILTHE) provided funding over a period of three years for each of 20 lecturers per year. In its White Paper (Department for Education and Skills, 2003) the Government notes the success of the scheme and stated its intention to more than double the number of lecturers who are supported. It was, and still is, regarded as a *'high profile scheme that celebrates excellence in teaching by recognizing individuals who are excellent teachers and promoters of learning'* (Institute for Learning and Teaching in Higher Education, 2002). The scheme was also an integral part of the ILT's strategy to fulfill its brief from the Dearing Report (Dearing, 1997) to enhance the status of learning and teaching in higher education. Elton (1998) warned that it was inevitable that examples of excellent teaching were likely to be extremely rare with a largely untrained profession. Not surprisingly, he concluded that a trained teaching profession was a prerequisite for teaching excellence.

The Institutional Audit, implemented by the Quality Assurance Agency for Higher Education (QAA), from September 2002, provides external pressure on all universities to improve teaching and learning, as the first of the ten objectives of the audit is: *'. . . to contribute, in conjunction with other mechanisms, to the promotion and enhancement of high quality in teaching and learning'* (QAA, 2002, p. 2). Whereas it is necessary to have some form of 'license to teach' in primary and secondary schools (Nicholls, 2001) and a requirement to hold a

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teaching qualification in further education has recently been phased in, a higher degree has been the normal requirement for entry into the higher education sector. However, since the Dearing Report and the formation of the ILTHE, (now the Higher Education Academy- HEA), many institutions have made it a requirement that lecturers new to higher education undertake a qualification such as a Postgraduate Certificate in Learning and Teaching or a Postgraduate Program in Academic Practice. Plans were established for national professional standards for lecturers in higher education, (Times Higher Education Supplement, 2002; Department for Education and Skills, 2003). Once these standards were agreed in 2006, there was the expectation that all new lecturing staff would obtain a standards-based teaching qualification.

Currently most, if not all, universities in the UK provide accredited pedagogic training courses for lecturers new to teaching in higher education. In this regard, the Higher Education Academy (HEA) was formed in May 2004 in the UK from a merger of the Institute for Learning and Teaching in Higher Education (ILTHE), the Learning and Teaching Support Network (LTSN), and the TQEF National Co-ordination Team (NCT) in the UK (see HEA website). The HEA (2006) stated that 'through our Teaching Quality Enhancement Fund (TQEF) we are providing funds over the next three years to ensure that strategies for learning and teaching become fully embedded within institutions and across the sector' (see HEFCE 2006/11).

The activity of teaching at university level was for a long time taken for granted and seen as unproblematic - a function performed by experts in their fields of research who seemed *de facto* qualified to pass on their knowledge

to future generations. This partly explains the scarcity of research on teaching in HE until the early eighties. However, in a context of increased massification, teaching has become an activity at the same time more complex directed at an increasingly diverse body of students in increasingly 'flexible' learning environments, more problematized through educational development and targeted funding initiatives, and more managed through monitor and managerialist understandings of practice.

1.3 Statement of the Problem

In recent years the higher education system in Bangladesh has been experiencing an unprecedented rate of change. This has been evidenced most dramatically by a huge increase in student numbers, with many departments also facing staffing problems. This has lead to intensive questioning of the quality of higher education in Bangladesh, and to a rethinking of the nature of traditional models of teaching, learning and technology integration which is made available to students. In the ever changing situation of higher education, university teachers' have the option to go abroad for post-graduate education or continue with their studies at home in Bangladesh. They do not have any opportunity to enhance their professional, pedagogical and technological skills as there are no initiatives or studies for professional and pedagogic development (PDP) for university teachers in Bangladesh. Thus, this study entitled 'Professional development and pedagogy of university teachers in Bangladesh: An exploratory study' dealt with identifying current professional development scope, examining pedagogical practices and technology in teaching and learning, and

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developing a professional development and pedagogy (PDP) program model for implementing in universities of Bangladesh .

1.4 Objectives of the Study

The main objective of the study is to explore the current situation of professional development, pedagogical practices, and technological requirements with a view to proposing a 'new program model of PDP' for university teachers in Bangladesh. In this regard, the specific objectives of the study are to:

- identify the current status of Professional Development scopes for university teachers' in Bangladesh
- ascertain the existing pedagogical practices in the university education of Bangladesh
- explore the situation and needs of technological skills for the university teachers
- develop a new program model of PDP for the university teachers

1.5 Research Questions

- What are the current situations of professional development scopes for University teachers?
- What pedagogical practices are being followed in the university classroom?
- What technological skills are needed for University teachers?
- What could be the suitable PDP program for the University teachers in Bangladesh?

1.6 Rationale of the Study

Study by Farnham (1999) indicated that the quality of academic staff, (mainly teachers), and how they were trained, recruited, rewarded, utilized and motivated were crucial to the effectiveness of any modern higher education system. This is not to underestimate the importance of non-academic support staff in institutions but integrating the diverse needs of the higher education authorities, students and governments with the professional demands of academic staff is fundamental to the effective delivery and management of contemporary higher education. So a strategic decision should be taken by the universities in Bangladesh, to determine what sort of teaching and learning environment they are going to provide for the students. In this regard, it is expected that teachers will educate, teach, guide and evaluate, and that they will also demonstrate their capacity to develop themselves to participate in modernizing the university and to make it more proactive and receptive to change (Aggrawal, 2000). In addition to this, it is important that university teachers need to carry out effective teaching, research and other scholarly activities. In the ever changing situation of higher education university teachers have the option to go abroad for post-graduate education or continue with their studies at home in Bangladesh. They have very limited opportunity to enhance their pedagogical and technological skills as there are no initiatives or study for pedagogic training for university teachers in Bangladesh.

Being a faculty of the Institute of Education & Research (IER) of the University of Dhaka, (DU), the researcher believes that this study may contribute much towards an initiative for enhancing the teaching quality of university teachers in Bangladesh. It might provide opportunities for teachers to be trained pedagogically and technologically within their own working environment at the university. He also believes that training within one's own working environment has a positive impact on the teacher. Schain (1988, p.4) observed, 'while colleges can do basic training in the arts and skills of teaching, the actual training of teachers must take place in schools where they teach. That is the real world and that is where teachers will spend most of their working lives.' From this point of view this study will be a milestone in Bangladesh, as it will present an initiative for academic staff development at university.

In this connection, Brew (1995) identified academic staff development as a growing area of university activity across the globe. She argued that traditionally there had been a disregard of training for teaching in higher education. So staff development to assist with individual, departmental, faculty and university-wide developments has now become urgent. It may include extending understanding of a wide range of educational processes: methods of teaching effectively, student learning, assessment and student-friendly classroom environment.

As stated earlier, there are 37 public and 85 private universities (www.ugc.gov.bd) with many departments and institutes having thousands of teachers. Among the teachers very limited numbers have pedagogic background, though they have to involve themselves in the teaching, learning and assessment process in the classroom. Sometimes they express their difficulties in dealing with students to their senior colleagues and informally. They feel that the teacher education institution like IER should take initiative to introduce a professional and pedagogic training program with the help of higher management of the university, but still there is no initiative for introducing this type of course for the university teachers in Bangladesh.

The desired situation, which forms the basis of this study, is for designing and implementing a PDP program which will be suitable in terms of time, content, money and the target groups' interest. If no action is taken on this current situation, the quality of university education will continue to decline nationally and internationally. So the present study is essential to contribute to enhancing the quality of higher education in Bangladesh. PDP of university teachers would contribute to develop the quality of higher education and to uphold the dignity of university education in Bangladesh.

In order to explore the professional, technological and pedagogical situation for the future action of university teachers in Bangladesh, it is essential to understand concepts associated with the professional development, pedagogy, technology integration in higher education and management of change as a change agent. If this innovation is to succeed then it is important

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to find out what senior managements and the teachers feel about the proposed program and to elicit their support. The next chapter 2 has offered a literature review focusing on professional development, pedagogy, technology integration and change management in higher education.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 Prologue

Rapid change is a pervasive part of our lives as human beings. Surprisingly, Seashore-Louis and Miles (1990) emphasize a focus on change because what exists cannot and should not continue to exist. It demands someone to be the agent for change, this is why, Sergiovanni (1992) wants ideas and professional authority to guide change. The present study expects to offer changes at the Universities in Bangladesh; what Fullan (1993) calls fundamental changes in the 'culture' of the university. Thus, it is necessary to explore some of the ambiguities, concepts and practices surrounding professional development (PD), pedagogy, ICT integration in university and change management (CM) for better understanding of the study issues. It further requires discussing effective principles and theories in the context of the present study. To do so, in this chapter, the researcher has first described some aspects of the concept of professional development, pedagogy, ICT integration in HE and change management focusing on: - what it is, how can it be effective, models of effective practices in organizations and coping with change from the perspectives of literature. Secondly, the researcher has inspected more closely effective professional development, pedagogy and andragogy, ICT in university and change management principles, how it has been defined, and specific relationships within a leadership context. Finally, the researcher has analyzed some effective models and has considered the suitability of professional development, pedagogy and andragogy, ICT in HE

and change management in education specifically in higher education. The major themes described in the following sub-sections are:

- Teacher Professional Development
- Pedagogy, Andragogy and continuous professional development
- ICT integration in Higher Education
- Change and Change management
- Conceptual framework of the study

2.2 Teacher Professional Development: What and Why

Professional development refers to processes and practices that improve the job-related knowledge, skills, and attitudes of employees. Ideally, these skills, knowledge, and attitudes should assure the intellectual, physical, emotional, and social development and well-being of each student within the university and/or school. The professional development offers to teachers and other educational staff to meet professional needs; is brief, infrequent, and mandated by the authority; focuses on topics selected by higher management; and allows little opportunity to practice, receive feedback, or to participate in follow-up activities. Effective professional development must be ongoing, interesting, and meet the needs of participating personnel.

Teachers have many opportunities for professional development both within formal professional development settings such as courses and in-service days and informal settings such as common planning and discussion of lessons, self-reflection and reading of professional journals (Borko, 2004; Desimone, 2009; Wei, Darling- Hammond, Andree, Richardson, & Orphanos, 2009).

Several researchers have tried to point out some principles for effective professional development by synthesizing results from various research and development projects (Borko, 2004; Desimone, 2009; Loucks-Horsley, Stiles, Mundry, Hewson, & Love, 2010; Wei, et al., 2009). Wei et al. (2009) define effective professional development as development that leads to improve knowledge and instruction by the teachers and improve student learning. They draw on research from both the US and elsewhere that links student learning to teacher development. Darling- Hammond, Wei and their colleagues put forward four main principles for designing professional development:

- Professional development should be intensive, ongoing, and connected to practice
- Professional development should focus on student learning and address the teaching of specific curriculum content
- Professional development should align with school improvement priorities and goals
- Professional development should build strong working relationships among teachers (Darling-Hammond, Wei Andree, Richardson, & Orphanos, 2009)

They indicate that other factors like university-based coaching and mentoring and induction programs for new teachers are important and likely to increase the effectiveness of teachers. They also point out that intensive professional development rooted in practice is most likely to change teaching practices and lead to increase student learning. According to Loucks-Horsley et al. (2010)

effective professional development is designed to address students learning goals and needs. It is driven by images of effective classroom learning and teaching and gives teachers opportunities to develop both their content and pedagogical content knowledge and inquire into their practice. It is a lifelong process, connected to other activities of the working system and should be continuously under evaluation.

According to Desimone (2009) there is a consensus among researchers on the main critical features of professional development that can be merged with changes in teachers practice and knowledge and to some degree in student learning. She points out five main features. These are focus on content, active learning, coherence, duration and collective participation. However, there is strong evidence that focus on content and how students learn that content in professional development can be linked to teacher development and to some extent to student learning. Active learning where teachers engage in various activities like observations, reviewing of student work and discussions is also an important feature. Teachers also need to feel that there is coherence between their beliefs and knowledge and their experiences in professional development and between reforms and policies at all levels. Teachers need time to work with, reflect on and try out new ideas and they need to do this in a learning community with others dealing with the same issues. According to this view professional development for teachers should be a collective endeavor, it should be about the work of teaching and the learning opportunities should be situated within the teachers practice.

Research, insights from practices and common sense converge around the understanding that skilled teachers have a significant impact on student learning. Helping teachers develop the knowledge and skills they need begins with rigorous teacher training programs. Subsequently, effective professional development helps teachers continue enhancing their knowledge and skills throughout their professions. Teacher Professional Development encompasses a wide variety of learning activities. The list includes, but is certainly not limited to, teacher study groups, coaching and mentoring relationships, teacher networks, participation on school improvement teams and committees that develop curricula and assessments, workshops, and college and university courses.

Teacher professional development requires several fundamental assumptions about contextual factors that are critical to ensuring that professional development is effective. The factors might be as follows:

- Professional development is most effective when it takes place in vibrant professional learning communities. These learning communities take various forms, but they all value ongoing learning by teachers and students. They encourage individual and collaborative experimentation, practice, and reflection. They foster collegiality and problem solving, and they emphasize continuous improvement in classrooms and universities.
- Professional development is most effective when there are strong leaders. These leaders recognize the value of high-quality professional development, encourage and facilitate teacher participation, and

communicate about the benefits of professional development to key stakeholders (e.g., students, parents, university authorities). Ideally, leadership for professional development is distributed among teachers, principals and other administrators, teaching staff, and institutions of higher education, and various cultural organizations. At the same time, no single formula defines the appropriate distribution of leadership.

- Professional development is most effective when there are adequate resources. Resources include money, people, and time. Just as leadership should be distributed, resources (people and money) can come from a variety of sources, with no single organization or stakeholder group expected to shoulder the whole burden. Careful analysis of how time is used in university schedules, district calendars, negotiated agreements and other policy documents can lead to more time for teacher learning. All of these resources will be used most effectively when allocations are coordinated and when there is careful assessment of the returns on investments in professional development. As with leadership, no single formula defines the adequacy of resources. Instead, resources are adequate when they ensure that all teachers can study, practice, and implement the knowledge and skills necessary to be effective with their students.
- Professional development is most effective when there is consensus around clear expectations for what teachers should know and be able to do to help all students learn. These expectations are shared among all stakeholders and district and school leaders work to build understanding and consensus around them. The expectations are

reflected in negotiated agreements, job descriptions and assignments, performance appraisal systems, systems of rewards and incentives for teachers, and in the design and content of teacher professional development.

In the end, the formula for effectiveness is simple: When the above four elements are in place, professional development can be highly effective. When they are missing or underdeveloped, professional development will not be effective and will have limited impact on teaching and learning. It might claim that quality professional development can improve both teacher practice and student achievement. However, professional development should primarily meet the individual needs of teachers.

Targeting professional development to groups of teachers within a university is good practice if teacher needs are similar. Self-selected professional development can take many forms, such as conference attendance, university coursework, and singular professional development sessions. Although teachers are likely to select professional development opportunities that meet their individual needs. Research-based standards afford the opportunity to better ensure that the professional development delivered to teachers is of high quality and is intense enough to improve the likelihood that the training programs will positively affect student achievement. Therefore, it include critical follow-up or the university leadership support is needed to implement the strategies covered in professional development programs.

2.2.1 University Teachers' Professional Development

The traditional university teacher's professional activities are restricted on instantaneous responsibilities and classroom concerns, called as restricted professionality. However, the outline of the university teacher's role is now shifting to the extent that it raises new questions about the teacher's autonomy, control and professionality (Pollard *et al*.,1994). These changes are due to changes in curriculum, pedagogy, organization of teaching, learning, as well as changes in socio-political pattern in the society. Therefore, the university teacher's role is no longer limited to the classroom. Instead, the university teacher's responsibilities are more wide extending beyond the classroom. The university teacher now needs to acquire a wide range of knowledge and skills to deal with new demands of increasing responsibilities or extended professionality (Hoyle, 1974). In extended professionality, the teacher acquires skills from mediation between professional experience and educational theory. Teaching is considered a rational activity in which classroom events are perceived in relation to policies and goals. The university teacher, as an extended professional, is supposed to improve his/her professional knowledge constantly. There is also elevated involvement in non- teaching duties such as research, co-curricular activities, and sometimes, community services. Hence, the extended professional perceives education in a broader social context. Thus, extensive responsibilities to be undertaken by teachers these days have made them accountable. Therefore the professional development program has to be designed considering the extended role of university teachers.

Universities look like they have status in risk, but the quality in higher education means that they have to worry constantly about losing position to their contemporary context. This means that they cannot afford to preserve academically weak programs, even if these programs offer great supplementary benefits. Therefore, teacher education is on the radar of every university faculty and administrator. By the twentieth century, the university has a monopoly on the highest levels of learning. It is the place that brought together the apex experts in their field, who generates the most important forms of new knowledge, and who taught this knowledge to the leaders of the next generation. Being there meant that university faculty members are now highest experts in their domain, who could be trusted to develop the knowledge base for the whole field of university education and then imbue this knowledge into the newly emerging members of the teaching profession. Thus, they require dual role in their profession e.g. good at own teaching and agent for transforming new knowledge to the next generation leaders. The following explore the required parameter for professional development (US department, 2006) of university teachers.

Content Knowledge and Quality Teaching

So far the researcher understands, effective professional development deepens all teachers' content knowledge and the knowledge and skills necessary to provide effective instruction and assess student progress. This might consider the following indicators:

- Professional development includes learning experiences and resources to ensure that teachers understand how the subject(s) they teach

addresses the content standards and the relationships between the subjects they teach and other subjects in the curriculum.

- Professional development provides opportunities for teachers to examine, observe, practice, and receive feedback on their use of research-based instructional strategies to help all of their students' master content standards.
- Professional development provides ongoing opportunities for teachers to examine a variety of classroom assessments, practice using them in their classrooms, and analyze the results to (1) understand and report on student mastery of content standards, (2) identify gaps in student learning, and (3) adjust instruction.

Research-based

Effective professional development ensures that all teachers have the knowledge, skills, and dispositions to apply research to decision making. It might consider the indicators which are as follows:

- Professional development includes ongoing opportunities for teachers to read and reflect on current research on topics of interest to them and consistent with state and local school improvement priorities.
- Professional development may involve two-way interactions with researchers to discuss research design, data collection, analysis, and reporting to assist teachers in understanding what works, particularly in areas where there may be competing perspectives and conclusions.
- Professional development involves individual teachers or teams of teachers, often in collaboration with researchers, in action research to

test their own hypotheses and to report the results about professional development program impact or the effectiveness of particular instructional strategies and programs for teachers and students.

Collaboration

Effective professional development ensures that teachers have the knowledge, skills, and dispositions to collaborate with others to improve instruction. It should cover the following indicators:

- Professional development provides ongoing opportunities for teachers to practice working with colleagues, including other teachers, head of the department, deans, administrative staffs, and others, and emphasizes that collaboration is a means and not an end in addressing issues related to university improvement and improved student learning.
- Professional development emphasizes constructive management of conflict and fosters understanding that disagreement and conflict are potentially beneficial elements of professional discourse.
- Professional development relies on communication technologies to broaden the scope of collaboration.

Student Learning Environments

Effective professional development ensures that all teachers are able to create safe, secure, and supportive learning environments for all students. The following indicators should be considered in this regard:

- Professional development promotes a safe, inclusive, equitable learning community where teachers, administrators and students participate in maintaining a climate of caring and respect.
- Professional development provides opportunities for teachers to develop and practice student ownership of management routines and practice creative solutions to conflicts.
- Professional development provides opportunities for teachers to use data on student behavior such a discipline referrals, suspension information and classroom climate surveys to analyze and refine practices that promote optimal learning environments.

Family Involvement

Effective professional development ensures that all teachers have the knowledge, skills, and dispositions to involve families and other community members as active partners in their children's education. The following indicators might be considered in this regard:

- Professional development provides opportunities for teachers to develop and demonstrate oral and written communication skills to build partnerships with parents and community members and to communicate expectations for student content standards and success on approved local, national and international assessments.
- Professional development supports teachers' understanding and respect for varying cultural backgrounds of students, families, and the community and how the diversity and richness of these cultural backgrounds can serve as foundations for student learning.

- Professional development includes opportunities for teachers to master the use of technology to strengthen partnerships with families and the community.

Evaluation

Rigorous evaluations assess the impact of professional development on teaching and student learning. This should cover the following indicators:

- Individuals who plan professional development ensure that plans include adequate resources for an objective evaluation and for reporting and disseminating the results.
- Individuals who plan professional development (1) identify the kinds of evidence about teaching and student learning that will be collected and used as indicators of the success of professional development, and (2) consistent with progress benchmarks and goals, determine how and when the data will be collected and reported.
- Evaluation should also assess the impact of professional development on classroom culture and university to support department/institute improvement efforts.

Design Teacher Learning

Effective professional development content and process reflect best practices in classroom learning and in-depth understanding of how and why students learn. The following indicators need to be considered regarding this issue:

- Professional development matches learning experiences, including the intensity and duration, with individual teacher needs, current knowledge and skills, and learning goals.
- Professional development combines a variety of learning experiences, including, but not limited to, individual study, demonstrations, observation, practice, feedback, and reflection as well as opportunities for collaboration and problem solving among colleagues.
- Professional development provides extensive follow-up, including, but not limited to, classroom demonstrations, feedback on mastery of new knowledge, feedback on demonstration of new skills, peer coaching and mentoring, and opportunities for additional study.
- Professional development relies on information technologies to provide more extensive and diverse content, and it also relies on communication technologies to expand access and participation and to create virtual professional learning communities.
- Professional development recognizes and draws on the knowledge, skills, and dispositions of successful teachers by including them as leaders, facilitators, and resources in professional learning opportunities

Current professional development is largely a market-driven system where teachers decide what they want or need. Decisions about professional development instead should be driven by student learning data and data collected from teacher evaluations. Teachers can be incentivized to complete additional opportunities that train them to become coaches, mentors, and

teacher leaders. Some universities have sought to improve the quality of professional development by pursuing select strategies. What is needed, however, are systemic, research-based changes in the way professional development is selected, delivered, and evaluated. Implementing these changes will help produce sustainable improvements in teacher professional practice and student learning in universities in Bangladesh.

University authority should lead efforts to develop strong data systems so information on teachers and the classes they teach can be collected and used to assess the quality of professional development. These data systems should be linked to information on student learning and the professional development a teacher receives. The linked data can help university leaders determine the impact of professional development. The linked data can also help authority make funding decisions to improve efficiency and control costs. With professional development offerings most often designed and delivered in-house in the university mostly based on project, challenges exist for universities in terms of evaluating whether the professional development a teacher receives has an effect on teaching practice and student achievement.

University authority should lead efforts to require meaningful evaluations at least annually for teachers. Evaluations should include classroom observations and should be used to identify teacher-specific professional development needs in subject content and instructional strategies. Efforts to tailor professional development to the specific needs of teachers can only occur if teachers are evaluated regularly. Currently, no existence of annual

teacher evaluations and require classroom observation to be part of the teacher evaluation process in universities in Bangladesh. Evaluations, along with other data, should be used to determine what type of professional development will most benefit teachers and their students. Using evaluation data to determine the individual needs of teachers is very important for new teachers and teachers assigned to teach in hard-to-staff universities with unique and significant needs.

Authority should consider providing incentives for teachers to participate in professional development to acquire advanced skills as coaches, mentors, and teacher leaders. These incentives should be part of a broader effort to design new models of teacher compensation that include differentiated salaries for teachers who assume responsibilities outside the classroom.

For professional learning to be effective, strong working relationships must exist among teachers. When time is available and relationships are created, the benefits include more consistency in instruction, deeper teacher knowledge, and an increased willingness to try new teaching approaches and to share practices (Joyce & Calhoun, 1996; Louis, Marks,& Kruse, 1996; McLaughlin & Talbert, 2001; Newman &Wehlage, 1997; Perez, et al., 2007; Stone, Alfeld, & Pearson, 2008). Quality professional development has many features, each of which may differ somewhat depending on the provider. Drawing upon years of experience and reflection upon key elements of effective professional development activities, the American Federation of Teachers (2002) recommended that professional development should:

- deepen and broaden knowledge of content;
- provide a strong foundation in the pedagogy of particular disciplines;
- provide knowledge about the teaching and learning processes;
- be rooted in and reflect the best available research;
- be aligned with the standards and curriculum teachers use;
- contribute to measurable improvement in student achievement;
- be intellectually engaging and address the complexity of teaching;
- provide sufficient time, support and resources to enable teachers to master new content and pedagogy and to integrate this knowledge and skill into their practice;
- be designed by teachers in cooperation with experts in the field;
- take a variety of forms; and
- be job-embedded and site specific. (pp. 11-12)

Teacher professional development (TPD) is groundwork for teachers and administrative staff members to overcome barriers on the transformation of classrooms. According to Hooker (2008), TPD can be assigned into three broad categories: standardized TPD, site-based TPD, and self-directed TPD. Firstly, standardized TPD typically characterizes a centralized approach such as workshops and training sessions. This TPD is characterized by offering new concepts, ideas, knowledge, instructional methods, and skills to large teacher populations throughout a country and region. Teachers are most likely to bring what they have learned back to their schools and classrooms after participating in workshops with less communication and collaboration between

teachers. Also, the knowledge and ideas that they learned in the workshops flow from the top through less experienced instructors to the target group. Therefore, what they bring back is typically unsuitable for a wide range of situations or problems. Moreover, there is no continuity of support between workshops. Therefore, it is difficult to effectively transform schools and classes. On the other hand, local professionals in specific fields often conduct site-based TPD in local places such as schools, resource centers, and teachers' colleges. Also, this TPD focuses on a "more gradual process of learning, building master of pedagogy, content and technology skills" through continuing learning opportunities and collaborative approaches (Hooker, 2008). This TPD style also focuses more on individual teachers' problems and local issues on new techniques for classroom practices. Teachers and participants bring their own perspectives and values underlying their practice, and form framework for understanding practice throughout established teacher communities.

In the third TPD, self-directed TPD, teachers are independently encouraged to initiate and design their own professional development by sharing resources and plans as well as discussing solutions and results. Teachers, who take initiative in attending this style TPD and learning new perspectives and ideas from on-line communities of teachers, would be models of lifelong learning. Thus, TPD can be evaluated based on successive supports from teachers' instructors and their collaborative learning approaches. Professional development has to be designed, implemented, and evaluated to meet the needs of particular teachers in particular situations in order to have a positive

impact (Kedzior, & Fifield, 2004). For example, a TPD about ICT needs to be designed for positively impacting school staff members' pedagogical skills, collaborations with colleagues, and technical knowledge, so that the participants can deepen their students' understanding and increase the students' motivation to learn with ICT tools. Furthermore, Kedzior and Fifield (2004) introduce Cognitively Guided Instruction (CGI) approaches, a model of TPD. Based on CGI, teachers create models of how students think and solve problems. Teachers use these models of student thinking to develop instructional materials that address students' learning needs. CGI provides opportunities for teachers to deepen their own understandings of subject matter, while they develop ways to teach it more effectively. (p. 3). According to Kedzior and Fifield (2004), teachers with the CGI approach have the greatest impact on students' basic skills, confidences, and reasoning and problem-solving performances. It is most important that TPD coordinators and planners design frameworks for teachers to have individual access to effective materials, resources, and ideas. Hence, they are encouraged to solve individual problems in practice and improve the current situations.

However, there are barriers to deliver effective professional development to teachers such as a concern about cost, anxiety of time to cover classes, and management of personal time in the process of learning new technology (Pierce and Ball, 2009). Especially, in-service teachers do not think they have sufficient time for the practices to attend the professional development or facilitate their carrier development (Yigit, & Ozturk, 2012). They may regard teaching students to use educational technology as a time-consuming task.

In-service teachers also tend to be irritated at thinking about where else they could be using their slight spare time more wisely. Vrasidas and Mclsaac (2001) suggest that professional development programs for educational reform require increased funding and strong determination of all people involving the educational systems. It will be one of the solutions to allow teachers paid time to participate in professional development activities. 'Changing the teacher competition structures and providing incentives can encourage teachers to participate in professional development activities throughout their careers and develop lifelong learning skills' (Vrasidas & Mclsaac, 2001, p.130). Thus, presenters of professional development should be mindful of barriers and present solutions for dealing with the barriers. Pierce and Ball (2009) suggested that 'professional development for teachers needs to address attitudes and perceptions as well as technological skill development' (p. 315). Hence, a successful transition from a traditional learning and teaching environment to a new meaningful one with technology requires teachers' positive preparation and initiative. Therefore, TPD should provide teachers with effective experiential activities that can validate their classroom practices with technology, and address teachers' attitudes and perceptions on educational technology integration for dealing with the barriers; this can end up increasing teachers' confidence and can-do attitude on educational technology integration.

University teachers' require variation in acquiring knowledge for quality teaching and learning in classroom. In this regard, Shulman (1987) defines seven categories of knowledge to provide a framework for teacher knowledge

which are:

- Content knowledge
- General pedagogical knowledge e.g. classroom control, using group work
- Pedagogical content knowledge
- Curriculum knowledge
- Knowledge of learners and their characteristics
- Knowledge of educational contexts e.g. schools and the wider community
- Knowledge of educational ends purposes and values

Each of these 'knowledges' is worthy of lengthy debate. However, initially Pedagogical Knowledge (PK) Content Knowledge (CK), Pedagogical Content Knowledge (PCK) and Curriculum Knowledge are of most interest to the researcher. These knowledges form the building blocks of many of the theoretical models the researcher will explore later but first he considers it important to comprehend how they are debated in the literature.

An effective teacher has a wide-ranging repertoire of different teaching and learning models, strategies and techniques and knows how to create the right conditions for learning. The choice is determined by the nature of the learning objective. The Key Stage 3 National Strategy booklet Key messages: Pedagogy and practice (Ref. DfES 1025/2003) provides guidance on the relationship between pedagogic approaches (teaching models), teaching strategies, techniques and methods of creating the conditions for learning in

order to inform lesson design. Though the teacher competence is especially complex to study and describe due to the multifaceted nature of the role and the intricacy of cognitive skills required when teaching effectively. Notwithstanding, highly competent teachers are often likened to symphony conductors or choreographers, who are capable of flexibly calibrating instruction to meet the needs of their students, in accordance with specific subject matter and an array of educational purposes (Shulman, 1987). Categories of highly skilled teachers' knowledge base include content knowledge, general pedagogical knowledge, curricular knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts (including school governance, finance, and community culture), and knowledge of educational ends and purposes according to philosophical and historical grounds (Shulman, 1987). However, the constellation of skills teachers should possess has also captured by a triadic framework for understanding teaching and learning (Darling-Hammond & Bransford, 2005). This is comprised of knowledge of learners and their developmental and social contexts (including knowledge of how people learn, human development and the cultivation of language), knowledge of teaching (including teaching subject matter, teaching diverse learners, assessment and classroom management), knowledge of subject matter and curricular goals (including education goals and purposes for skills, content and subject matter) and the intersection of all three (Darling-Hammond & Bransford, 2005). Therefore, the overlapping triadic framework and the categories of a highly skilled teachers' knowledge base are analogous and encapsulate the many things that an educator needs to know. On the

whole, skilled teachers portray self-confidence, view their classroom as a community of thinkers, deftly exploit opportunities to cultivate positive relationships with their students, instruct in a student-centered fashion, demonstrate subject area mastery, and contribute to the field as a whole via leadership and professional commitment (Smith & Strahan, 2004). Furthermore, highly skilled teachers are one of the single most important influences on student success (Kane, Rockoff, & Staiger, 2007). Class size and other salient variables do not impact students' learning trajectories as much as the quality of their teachers (Kane, Rockoff, & Staiger, 2007). In addition, teacher-based influences impact students' performances throughout a significant span of their studentship careers (Sanders & Rivers, 1996). Teachers facilitate the process whereby students cultivate habits of mind and knowledge schemes that are prerequisites for success, meaningful contributions and prosperity in an open, technological world (Darling-Hammond, 1997). This makes effective teacher professional development training of paramount importance in the cultivation of an educated citizenry within the country.

The highest performing countries in educational achievement -- Finland, Sweden, Singapore, Hong Kong and Korea -- have all make extensive teachers' professional development training a priority. Again, this illustrates the strong, positive relationship between well-executed teacher training and high-level student learning. Tuition and stipends for living expenses are provided for those in multiyear preparation programs. Salaries for new teachers are, relatively speaking, substantial. In addition, a full fifteen to

twenty hours per week is allocated for collaborative planning and professional development. This practice stands in stark contrast to the three to four hours per week typically allocated to educators working in the United States. Consistent with the multifaceted support and compensation given to teachers in high-performing countries, is the practice of conferring financial incentives to those willing to serve students in more disadvantaged locations. Teachers in the United States have received little or no incentives to work in low income contexts throughout urban and rural America. Methods of teacher recruitment however, do exist. One is called the alternate route training program, which is thought to be a tool for attracting men, teachers of color, and teachers willing to work in understaffed districts. These programs vary tremendously, yet each moves prospective teachers into full-time paid teaching positions before they have completed the requirements for licensure. Where traditional teacher training programs instituted by schools of higher education require students to know theories of child development, cognition and pedagogy, alternate route programs cover the 'no-nonsense' tools of teaching such as classroom management. Some 'fast-track' programs require just four to eight weeks of pre-service training and cost as little. Most of the programs are very practical and generic; little focus is placed on cultivating pedagogical content knowledge. In the end, individual states dictate what is required to hold a teaching license. This renders many who are least experienced for work in challenging contexts, quickly routed into assuming such positions.

Challenges within the urban environment however, call for more extensive, context- specific training programs among those who are interested in a long-

term career in teaching (Vaishali, 2008). To that end, yearlong, paid residencies have been proposed. Such an approach is deemed to be superior to alternate route or standard teacher education programs because the lack of student teaching for alternate route candidates renders them often ill-equipped to manage the rigors of high-need contexts (Darling-Hammond, 2008). Traditional student teaching in disadvantaged environments can be equally problematic, as apprentices frequently watch their cooperating teachers fail to manage and facilitate the growth of challenging students. Furthermore, cooperating teachers in high-income districts who deftly perform their professional roles provide little in the way of training for those in the field who will eventually serve disadvantaged, urban youth (Darling-Hammond, 2008). Through the researcher own acquaintance with the literature on teaching and learning he has recognized that much of the theoretical underpinnings in educational development programs are based on a psychology-based approach to teaching and learning (Malcolm & Zukas, 2001). Much of this literature, which is briefly surveyed, tends to focus on cognitive processes, intentions and beliefs, and on strategies to enable or enact them. This body of knowledge which has become the dominant model for teaching and learning seemed inadequate to reflect the realities of teaching in practice.

2.2.2 Teachers Professional Development and Technology

Teaching is an extraordinarily difficult job that looks easy, which is a devastating combination for its professional standing and for the standing of its professional educators. Why is teaching so difficult? One reason is that

teaching cannot succeed without the compliance of the student. Most professions can carry out their work independent of the client; surgeons operate on the anesthetized and lawyers defend the mute. But teachers can only accomplish their goals if students are willing to learn. They exert their efforts to motivate student compliance in the task of learning, but they cannot on their own make learning happen. Thus, in the several decades, researchers have studied on pre-service teachers' skills, attitudes, and beliefs for technology. Recently, pre-service teachers are likely to pay attention toward new technologies such as Web 2.0 for creating learner-centered environment. However, these studies have revealed that pre-service and in-service teachers do not have sufficient competencies of using technologies for educational purpose in their fields. Chen, Lim, & Tan (2010) researched pre-service teachers' ICT experiences and competencies and found that there are a gap between pre-service teachers' competencies and that of ICT for teaching and learning. Among new-generation pre-service teachers, more than 80% of them have familiarity with the access to media consumption tools, such as sending/receiving emails, chatting online, social networking website, participating in message boards, watching videos/video casts, listening to music/ audio podcasts, reading online news, and searching information online. On the other hand, the research revealed that over 70% of the pre-service teachers had not used ICT devices for learning and teaching in their classrooms, such as storyboarding/comics creation tools, visual learning and conferencing platforms. Kumar & Vigil (2011) also compared pre-service teachers' formal use of different technologies and their educational use, including online forums, social bookmarking, Google Docs, Blogs, Wikis,

Podcasts, and online videos. The researchers found that pre-service teachers more often used these new technologies for the informal purposes than for the formal purposes in their teaching activities. Non-educational purpose uses of technologies, such as social communication and entertainment, are more common and general among pre-service teachers, and they do not have sufficient ideas how to best use the ICT competencies for teaching and learning (Kumar & Vigil, 2011). However, when considering the teacher education program and its curriculum that are associate with pre-service teachers' knowledge and skills of using technology, teacher education courses do not provide pre-service teachers with sufficient practice to cultivate technology skills in their future classrooms (Wild, 1995; Chen, Lim, & Tan, 2010; Kumar & Vigil, 2011). Pre-service teachers learn to use technologies informally rather than creating and implementing online teaching content through their teacher education programs. One of the strategies for reducing the gap between what they know and what they do is associated with their confidence, or self-efficacy, for performing the task successfully (Ertmer, & Ottenbreit-Leftwich, 2010). Experiential practices within the classroom and through field experiences could help students to develop skills using technology as an instructional tool, which coincidently helps students deal with their fears of changing and making mistakes. In this regard, the researcher of this study do agree as Şahin (2003) suggested that teacher education programs should provide learner centered environments based on constructivism so that pre-service teachers can build confidence through field experiences developing their skills. He explored pre-service teachers' perceptions in the Instructional Technology and Material Development course,

and revealed that over 90% of the pre-service teachers expect being active in their courses through the learning process. Whatsoever, constructivism learning approach can make it possible for pre-service teachers to learn actively through experiential trainings, and each learner can gain personal mastery.

2.2.3 Core Principles of Professional Development

The researcher believes that five principles, if followed, can lead to successful and productive professional development. These principles are based on the tenets of adult learning and the fundamental belief that all teachers bring strengths to the profession and want their students to achieve and feel successful; teachers should attempt new ways of teaching when they are convinced that their students could benefit. (cf., Loucks-Horsley, et al., 2010)

Principle 1: *Build on foundation of skills, knowledge, and expertise*. Professional development must build upon the current foundation of basic skills, knowledge, and areas of expertise of the educational personnel involved. Professional development will link new knowledge and activities with what the practitioners already know and are able to do, and will extend their thinking. Those attending any professional development activity will bring with them different experiences, knowledge, and skills. The individual(s) providing the activity must determine the current level of expertise, the needs of participants, and develop appropriate materials and activities. Professional development activities that do not target a specific audience must, at a minimum, offer basic knowledge to ensure that practitioners are operating from the same foundation.

Principle 2: *Engage participants as learners.* Professional development should include rich and varied opportunities that engage educational personnel as learners and offer the opportunity to apply new skills and knowledge. Professional development is effective when the materials are presented in a hands-on manner using techniques that suit various learning styles. In addition, practitioners need time to try out new methods in a safe environment before either moving to another topic or attempting the method in the classroom.

Principle 3: *Provide practice, feedback, and follow-up.* Professional development should offer educational personnel opportunities for (1) practicing the new skills, strategies, and techniques; (2) providing feedback on performance; and (3) continuing follow-up activities. A constructivist approach to staff development precludes the didactic presentation of de-contextualized knowledge and skills. Principle 3 reinforces the precept that information about skills and knowledge must be presented to educational personnel in a manner that allows them to link new information to their current knowledge and skills, and allows them to construct their own meanings. Interactive, hands-on approaches to professional development make use of sound principles of adult learning. Modeling specific skills with practice sessions also will allow practitioners actively to make meaning out of the new information. Finally, a period of classroom application followed by formal observation and feedback should be used to reinforce the development of new skills.

Principle 4**:** *Measure changes in teacher knowledge and skills*. Successful and effective professional development should be manifested by measurable increases in participant knowledge and skills. The evaluation of a participant's knowledge and skills is essential to the effectiveness of the professional development program. In order to evaluate the participant, an appropriate amount and variety of information about what participants do and their affect on people should be collected. Assuming that the participants are teachers, then a variety of evidence of the genuine teaching work and performance of the teacher should be collected.

Principle 5: *Measure changes in student performance*. Professional development should be linked to measurable outcomes in student performance, behavior, and/or achievement. A direct link to student outcomes is necessary to determine what types of professional development activities are effective within specific contexts. The University level involved in focused, long-term professional development activities must first identify what measurable student outcomes it wants to change. The problem for which professional development is sought may provide the type of outcome to be assessed. Principle 5 states that a link must be established as evidence that professional development contribute to significant improvement in the quality of educational programs or student achievement.

2.2.4 Components for Teacher Professional Development

Our society is passing through a technology revolution during the past many years with the advent of modern technologies and hence many changes

occurred in every field of life which largely contributed towards the change of human psyche according to the rapid changing world. The rapid diffusion of these technologies also altered the attitudes and approaches of the students and teachers in diverse ways and influenced the teaching learning process. Therefore, importance of role of the teachers as catalyst agent has become more significant. In the context of these rapid changes, it is imperative that teachers must update their knowledge and skills and be familiar with the latest developments in the field. Therefore, professional development of teachers according to the changing need is very vital. The professional development of teachers entail his growth in knowledge of his subject, in pedagogy and training techniques, affection to students and for his institution, in moral and ethical values and growth of his desire to contribute best to the world of learning and society. No profession can grow unless its members are prepared to grow professionally and sincerely. Though Academic Staff Orientation Scheme greatly helps in professional growth of teachers as many past (Gupta,1995; Mavi, 1995; Rai and Rai; 1995) and recent studies (Sharma and Jain, 2006; Pawar and Mouli, 2008; Behera 2009; Ramalingam, 2009; Goswami, 2010) reported, we have to evaluate whether a teacher achieve professional competitiveness the teachers should have in the changing scenario by attending these programs. Rather, as a stereotypic programs teachers attending as a formality to get higher posts. Further, in the changing world, with the expansion of activities the teachers are exposed to various other works apart from the academic aspects. Therefore the teachers are frequently working in stress. However, the present day professional development programs are not looking in to the physical, mental and

psychological well-being of the teachers which should have an important position in the professional development programs. The key components of a good model for professional development are as follows:

Academic Components

- ***Teacher as learners and teachers***

Teachers are highly influenced by what goes on in their lives, their priorities and lives are therefore important. Each teacher experiences their own individual career pattern that influences their desire and readiness to engage in improvement activities. Individuals' perceptions and actions about changing and developing their teaching are highly influenced by what they believe, as well as by their knowledge. Some people believe that ability is inherited a teacher may resist learning a new technique because the teacher believes that teaching using this method does not work. whereas valuing individuals as people and valuing their contributions enhances teachers' self-esteem and builds trust. Another influence is the detailed and deep knowledge a teacher has on general pedagogy and pedagogical content, as well as their subject disciplines. This incorporates knowledge about each students' strengths, weaknesses, home background, cultural experiences, and learning styles. It also includes teachers' understanding of how their extensive knowledge interacts with the classroom context and a self-awareness that enables them to be conscious of their own thoughts, feelings, intentions and behaviors, and of other's values. The professional development strategies should therefore have to focus on creating awareness on the teachers' role to deliver the best.

- ***Identify the gap between the perfect and the existent***

Design of a practical professional development program, should articulate what are demands and needs in college and then compare this ideal to actual practices. While designing a professional development program, it is vital to consider the skills and abilities, dispositions of educated persons should have, what educated persons can able to do in their thinking, what is an ideal college, what is an ideal learning environment, what intellectual skills, abilities and traits would we like to see students should have when they leave the college.

- ***Observe assess and evaluate the new practices***

Individual teachers are influenced by the extent of their teaching strategies and their ability to experiment with their own practice, by working through a learning cycle of: activity, reflection and evaluation, extracting meaning and planning how to use the learning in future. In particular, when teachers plan for students' learning, includes tasks and processes to promote active learning, collaborative learning, learner responsibility and learning about learning, and skills related to handling relationships. Motivation is the starting point for learning. For a busy and often overworked teacher to devote effort to change and new learning, there has to be a good reason for the change: Also, faced with a new teaching strategy, the teacher needs to know it is practical and useful, relevant to the teacher his classroom. Without confidence in the likelihood of being successful, motivation is insufficient. While many teachers may express individuality and choose, at times, to work and learn alone, some also see the potential within groups, and know their work benefit from

collaboration. So that Teachers need to rethink their own practice and teach in ways they have never contemplated before. Success depends on how teachers are able to learn the new skills and unlearn previous beliefs and practices. Teachers must be in a position to see the new methods from the pupils' perspectives and therefore pre-packaged training is not always effective.

- ***Reflective practices***

Professional development today is not solely concerned with supporting teaching and knowledge. Support is also needed for teachers to reflect on their current practices and adapt new knowledge and beliefs to their own teaching contexts. The primary benefit of reflective practice for teachers is a deeper understanding of their own teaching style and ultimately, greater effectiveness as a teacher. Other specific benefits are validation of teacher's ideals, beneficial challenges to tradition, the recognition of teaching as artistry, and respect for diversity in applying theory to classroom practices. The opportunity for exploration through reflection enables the teachers to acknowledge and validate what the teacher is learning. Research on effective teaching over the past two decades has shown that effective practice is linked to inquiry, reflection, and continuous professional growth. Reflective practice can be a beneficial form of professional development at both the pre- service and in-service levels of teaching. By gaining a better understanding of their own individual teaching styles through reflective practice, teachers can improve their effectiveness in the classroom. Support through modeling, training and the cooperative resolving of problems

- ***Promote critical thinking***

Create an atmosphere that places critical thinking as the focal point of the college's philosophy, mission and goals. Provide support for faculty to learn the foundations of critical thinking, so that they can begin to integrate it into their teaching. Connect assessment of the faculty and the college as a whole to promot critical thinking within and throughout the curriculum**.**

- ***Long-term approach***

A professional development program can succeed only through a long-term approach. The fact is that a commitment to critical thinking is a commitment to continuous improvement. Improve how we teach. Do a better job of fostering intellectual discipline; improve abilities to reason through problems and issues within various work dimensions. A quality professional development program is never ending and ever evolving from a deep base in foundational insights.

- ***Staff workshops***

Introduce workshops for self development of faculties conducted by the experts systematically, emphasising the aspects such as learning, how to analyze thinking within any discipline, understanding the traits of the disciplined mind and how to foster them in students, ethical reasoning, scientific reasoning, reasoning within the social sciences, historical reasoning, mathematical reasoning, professional reasoning in a various fields, how to detect bias and propaganda, how to read closely, how to write substantively, teaching students to assess their own reasoning, teaching students to take

command of their emotional lives. This will enable faculty to continually to up-grade their knowledge and success in the classroom. Moreover, it will foster the faculty's ability to take critical thinking and contextualize it, more and more successfully, in multiple domains.

- ***Provide activities and opportunities***

Provide faculty and staff with opportunities to share ideas they are learning and testing in the classroom. The plan for these activities should take into account insights so an effective plan can be established. Regularly scheduled discussions, pre-designed foundational seminars facilitated by the leadership team, access to publications and other resources with their subjects and interests are to be facilitated. The intent of the Model is to encourage individuals to pursue professional development experiences that are relevant. These experiences may be self-directed, structured, and/or field-based. They may include, but are not limited to:

Physical and Health Components

With the changing life style and many other factors, the individuals are facing with health problems. Many teachers try to work through illness and yet doing so may in fact be harmful to their health, as well as the health of their students and co-workers. The health awareness for the teachers is therefore very important. The health programs can be integrated with the professional development programs and basic training, workshops on various aspect of health can be conducted by inviting experts of various fields related to health. Some studies have demonstrated that more specific physical disorders

prevalence is clearly higher for teachers. Impaired phonation represents the most characteristic teachers' physical disorder because it is directly related to their specific occupational demands when teaching. According to a number of studies aimed at identifying which occupational groups were at an increased risk of suffering from occupational voice disorders, teachers were found to be particularly vulnerable to developing such problems. Teachers generally face sleep- deprivation so that their teaching skills are significantly impacted. Sleepy teachers are at a higher risk of providing insufficient supervision and inferior classroom instruction. They also report more mood swings, and are at a higher risk of serious personal health problems.

Mental and Psychological Components

Teachers, in general, experience high levels of job-related stress compared to professionals in other fields. The question of teacher motivation is of paramount concern for educational leaders and managers. Both the commonly observed deficiency in teacher motivation and the abundance of teacher stress are serious problems that can be mitigated through teacher education. Sharing professional experiences with colleagues, identifying specific stress factors and possible coping strategies, replacing irrational beliefs with more appropriate beliefs, analyzing strategies for dealing with student discipline and motivation problems in the classroom, and practicing assertiveness and relaxation for decrease in their irrational beliefs and professional distress, as well as an increase in professional motivation and the perception of well-being. When a potentially threatening event is encountered, a reflexive, cognitive balancing act ensues; weighing the

perceived demands of the event against one's perceived ability to deal with them (Lazarus & Folkman, 1984). Events perceived as potential threats trigger the stress response, a series of physiological and psychological changes that occur when coping capacities are seriously challenged. The most typical trigger to the stress response is the perception that ones' coping resources are inadequate for handling life demands. Symptoms of stress in teachers can include anxiety and frustration, impaired performance, and ruptured interpersonal relationships at work and home (Kyriacou, 2001). Researchers (Lecompte& Dworkin, 1991; Farber, 1998; Troman & Woods, 2001) note that teachers who experience stress over long periods of time may experience what is known as burnout. Organizational practices that prevent teacher burnout are generally those that allow teachers some control over their daily challenges. At the individual level, self-efficacy and the ability to maintain perspective with regard to daily events have been described as anxiety-buffers (Greenberg, 1999).

Further, provide adequate resources and facilities to support teachers' instructional practice, provide clear job descriptions and expectations in an effort to address role ambiguity and conflict. Establish and maintain open lines of communication between teachers and administrators to provide administrative support and performance feedback that may act as a buffer against stress. Allow for and encourage professional development activities such as mentoring and networking, which may engender a sense of accomplishment and a more fully developed professional identity for teachers.

2.2.5 Policy Framework for University Teacher Professional Development

The universities have to identify organizational goals and priorities, and develop and implement a range of strategies and programs to enhance and build the capacity skills and professionalism of employees to enable them to contribute effectively to the University's mission and strategic directions. The Universities should commit to provide employees with:

- The opportunity to develop capabilities that complement organizational and work unit goals.
- The opportunity to develop a career plan and participate in career development activities that extend and enhance their capabilities and capacity for advancement within the Universities.
- Equity of access to professional development opportunities.
- Acknowledge continuing professional development as a framework to support and encourage opportunities for continuous learning.
- Ensure equity of access to professional development programs, resources and support for particular groups and individuals.
- Recognize that responsibility for professional development is shared between employees, supervisors and managers for the planning and undertaking of professional development relevant to their roles and responsibilities.
- Ensure the provision of training and development that meet the core requirements of the University's and employees' roles and responsibilities and that comply with statutory obligations and policies.
- Use performance planning and career development processes as the primary means of ensuring alignment between individual, unit, and

organisational plans and priorities and identify individual and work unit learning and development needs of employees.

- Engage in planning, development and continuous improvement of internal professional development programs.
- Evaluate employee participation, outcomes and the relevance and quality of professional development programs on an ongoing basis.
- Integrate physical and mental health of the employees as a part of professional development.
- Understand and manage the stress and burn out of the teachers and include the stress engagement as an important aspect of professional development program.

In addition, simply training teachers will not permanently change their practice unless the environment in which the work allows this. Changing the environment will enable teachers who have the appropriate pedagogical content knowledge to use different teaching strategies. Teachers often know far more pedagogic strategies than they actually use. Therefore a teacher's classroom practice might be considered as selection from a wide range of pedagogical content knowledge rather than an expression of the sum total. The selection of actual classroom practice is constrained by the resources and the normative behavior of the teachers' works. Such constraints determine which of the teacher's potential practices will be used. New practices will only survive if they fit with the working environment. Novel practices that do not fit the environment will not be repeated, even if tried. Creativity in practice is not precluded by this proposed interactive viewpoint.

Some faculty will go further than others in fostering intellectual skills. The extent to which critical thinking is a pervasive philosophy of any college depends on many interrelated and dynamic variables. Nevertheless, through an effective professional development program, we can create a learning college that fosters intellectual discipline. This can only be done with a well-designed plan that evolves as it is carried out, a plan that presupposes a substantive concept of critical thinking, with true and lasting administrative commitment and support, and a sufficient dose of intellectual humility. The effective practice is linked to inquiry, reflection, and continuous professional growth. Efforts should be made to develop more strategies for mental participation. Enough scope should be provided for interactive sessions among the participants for exchanging their experiences on curriculum construction, teaching methodology, evaluation system etc. Organization of seminars on Educational Technology, Communication Technology, Innovate Techniques, Health awareness and various stress management techniques should form an integral component of professional development program.

2.3 Pedagogy, Andragogy and Continuous Professional Development

Pedagogy is a scientific discipline with its own philosophical and scientific orientations borne between the 18th and 20th centuries. Because of its double stance, namely the theoretical and practical components, the discipline has continued to spark-off various interpretations and controversies. For instance, it has been defined in different ways, including the study of being a teacher or the process of teaching, strategies of instruction or style of instruction. Other scholars have used pedagogy in relation to the art and science of teaching

children, or the theory and practice of education. Pedagogy can also refer to the relationship between the teacher and the student. Conceptually, it is due to the relationship of pedagogy to children that some scholars prefer the use of andragogy (the art and science of helping adults learn) when referring to teaching in higher education. However, andragogy used critical pedagogy to refer to the method of teaching adults. If pedagogy is viewed as focusing on transmitting content in a teacher-controlled environment and andragogy on facilitating the acquisition of and critical thinking about content and application in real life then both are relevant to higher education. Therefore, pedagogical knowledge is according to Shulman (1987) the specialized didactic knowledge of the teacher, which illuminates the connection between subject matter and classroom know-how. Pedagogical content knowledge brings together these two critical elements of teaching—content and pedagogy—to describe the understanding and skills teachers and teacher educators need to transform the conceptual, factual, with appropriate examples, metaphors, and applications for a particular group of students (Shulman, 1987).

Meanwhile, continuous professional development (CPD), a structured approach to learning helps ensure competence in practice. CPD helps in the construction and adaptation of mutually shared networks of theory and practice. There are several CPD models. It identifies three main categories of CPD models including, transmission, transformation and transition. According to Kennedy (2007), transmission is composed of three sub-models; namely ‘training’, ‘award-bearing’ and ‘deficit’ models. The ‘training model’ is when teachers are provided with opportunity to update their skills in order to be able

to demonstrate their competence, while the 'award-bearing model' emphasizes the completion of award-bearing programs of study – usually, but not exclusively, validated by universities. The 'deficit model' is usually designed to address a perceived deficit in teacher performance. The second main category is transformation, which includes 'action research' in which teachers themselves are learners and researchers, with a view to improving the quality of action within it. The transformative model combines practice and experience sharing. The 'quality of action' can be perceived as the teachers' understanding and interpretation of the situation, as well as the practice within the situation. This model considers teachers as being empowered to use the pedagogical spaces in more situated ways.

The third model is transitional, which combines 'coaching/mentoring', 'community of practice' and 'standard models'. In 'coaching/mentoring' emphasis is on a one-to-one relationship, usually between two teachers, (one novice and a senior), which is designed to support CPD. 'Community of practice' involves more than two teachers. Learning involves mutual engagement, understanding and tuning teachers' enterprise and developing repertoire, styles and discourses. Learning within a 'community of practice' happens as a result of that community and its interactions, and not merely as a result of planned learning episodes such as programmed courses of study. The cascade model (not categorised among the three) involves individual teachers attending 'training events' and then cascading or disseminating the information to colleagues. Commonly employed in situations where resources

are limited, the cascade model can be used to strengthen the three main models.

The CPD model adopted is dependent on the purpose. If the aim is preparing teachers to implement reforms then transmission models are preferred. For supporting teachers to contribute to and shape educational policies, one should adopt the transformative model. Transitional models can be used to support the first two models. These models provided a lens through which the University pedagogical program might be evaluated.

2.3.1 Pedagogy in Higher Education

In higher education, the pedagogy of classroom is often even more constrained because of the requirements to cover many degree topics, teach large student cohorts, meet strict deadlines and for university teachers to keep up with their research as well as teaching load and commitments (e.g. Cox and Lewis, 1978, Laurillard, 1993, Reynolds et al., 2007). In university, new faculty members, usually, often patter (or try to pattern) their first teaching experiences based on former professor's teaching methods, with the goal to be an effective teacher and respected and liked by their student (Cornwell & Salam, 2009). Many universities either had or have established centers to support faculty in their teaching endeavors. The movement toward a focus on teaching and learning excellence has led many institutes to value teaching quality with research and reviewing faculty dossiers for promotion, tenure, and merit pay. Additionally, accreditation of higher education institutions has increasingly reflected external pressures for accountability of

student learning through teachers' pedagogical practices. Thus, pedagogy in higher education refers as a complex and not easily defined phenomenon. Even the definition of pedagogy appears to be somewhat obscure. Watkins and Mortimer (1999) define it as 'any conscious activity by one person designed to enhance the learning of another' (p3). Alexander (2003) has his own preferred definition which suggests that pedagogy requires discourse:

> *Pedagogy is the act of teaching together with its attendant discourse. It is what one needs to know, and the skills one needs to command in order to make and justify the many different kinds of decisions of which teaching is constituted. (p3)*

Leach and Moon (1999) expand further on what may define pedagogy by describing a *Pedagogical Setting* as 'the practice that a teacher, together with a particular group of learners creates, enacts and experiences' (p267). In doing so they suggest that pedagogy is a joint activity in which the learner has an active role. This offers a different perspective from previous definitions offered and draws in the social interaction between teachers and learners. Many others: McNamara (1991), Brown and McIntyre (1993), Black and Wiliam (1998) Ireson et al (1999), Bruner (1999) and Loveless (2002) acknowledge that the variables which help in understanding teachers' pedagogy are complex and suggest there are many factors that affect practice. Teachers bring far more than just the latest educators' thinking on how they should teach into the classroom. Practice may be affected, for example by the university environment, a teacher's position in the university, previous teaching experience, teacher training and a teacher's own experience of learning. Traditionally, the concept of pedagogy has been identified as the "recitation script," in which teachers assign texts and seat-

work, assess students' learning, then make the next assignment, producing short recurrent sequences of assign-assess, assign-assess in classrooms led firmly by the teacher with little or no student interaction (Hoetker & AhIbrand, 1969; Tharp & Gallimore, 1988). Early in this century, pedagogy has outlined as an individual student activity performed under the direction of the teacher which is primarily oriented to producing factory or office workers (Linder-Scholer, 1996). As this century passed its mid-point, pedagogy dimensions has been changed through intense efforts to promote student achievement through revised curricula, expanded standardized testing, a variety of increased and decreased quality control initiatives, and massive endeavors to increase equity and equality of educational opportunity, among a variety of other programmatic and regulatory approaches (Darling-Hammond, 1998). At the same time, more consideration was given to the social interactions and cultural contexts inside and outside the classroom that influence the development of student critical thinking (Brown, Stein, & Forman, 1996; Cobb, 1994; Piaget, 1971; Tharp & Gallimore, 1988). It became clear that the common tradition relies on cognitive development outside of university, in learner's homes or in community institutions with literacy, global information and problem solving.

Recently, pedagogy emphases on collaboration, communication, and community for teaching and learning which have increased focus on the role of social and cultural factors in student achievement (Brown & Campione, 1994, 1996; Cobb, 1994; Rogoff, Matusov, & White, 1996; Tharp & Gallimore, 1988; Vygotsky, 1978). In addition, socio-cultural theory and activity theory

have expanded definitions of teaching and learning to emphasize their social, cultural, language, and political contexts (Leont'ev, 1981; Moll, 1990; Rogoff et al., 1996; Tharp & Gallimore, 1988; Vygotsky, 1978). In these theories, pedagogy has focused on learning where it is an active, collaborative process of knowledge construction located in the interactions of teacher and student, in the social structures of classrooms, and in the larger institution of the university.

More than ever before, teaching or pedagogy means that teachers assist students continuously through interaction and activity in the ongoing social events of the classroom. For example, Brown and McIntyre (1993, p28) provide 10 qualities of teachers proposed by pupils that create good teaching and a further 4 proposed by teachers (p39):

- Creation of a relaxed and enjoyable atmosphere in the classroom
- Retention of control in the classroom
- Presentation of work in a way that interests and motivates
- Providing conditions so that pupils understand the work
- Making clear what pupils are to do and achieve
- Judging what can be expected of a pupil
- Helping pupils with difficulties
- Encouraging pupils to raise expectations of themselves
- Development of personal mature relationships with pupils
- Teachers' personal talents.
- Considering how planning interacts with the management of classes and lessons

- The management of lesson introductions
- Managing question and answer sessions.
- Building the confidence and trust of pupils

These qualities however which largely refer to general teaching activities and hence TK, appear to lack any reference to how learner learns. Consequently the researcher of this study has looked for more explicit views on pedagogy and children's learning to Bruner (1999). He considers that the way in which teachers adopt an understanding of children's minds is a prerequisite to any change in pedagogical practice. His view is that there are four dominant models of learners' minds that need to be understood: children as imitative learners, children as learning from didactic exposure, viewing children as thinkers and children as managers of their own knowledge.

Pedagogy also means that teachers learn about their students' homes and communities to understand how to draw on local funds of knowledge for academic learning. Today's pedagogy applies the concepts and findings of research that show promise for all students' achievement, such as communities of learners, content development, guided participation, emergent literacy, funds of knowledge, cultural compatibility and instructional conversation (Brown & Campione, 1994; Cobb, 1994; González et al., 1993; McLaughlin & Talbert, 1993; Purcell-Gates, 1995; Rogoff et al., 1996; Tharp & Gallimore, 1988; Vogt, Jordan, & Tharp, 1992). These pedagogical approaches, like other innovations and advances, are effective or ineffective depending on the presence of resources and supports for teachers'

opportunities to learn, experiment, and reflect in programs and universities restructured for such activity (Darling-Hammond, 1997). This pedagogical movement as it is demonstrated in many classrooms complements the efforts of standards-based reform. For example, Darling-Hammond (1997) advocates major changes that would "encourage the design of grouping structures that create extended, intensive teacher/student relationships." In fact, the principles for achieving such reforms are known and applied, having arisen from a mature research and theoretical literature, mature enough to serve as standards around which pedagogical reform can rally. The standards for pedagogy to be elucidated here are drawn from educational research and current practice that places teaching in the classroom itself; no longer must education depend on teaching to occur elsewhere. Thus, the promise of the new pedagogy is academic success for all students, because the university now undertakes to teach all that its students need to know.

Furthermore, the emergence of the construct of Pedagogical content knowledge (PCK) is commonly attributed to Shulman (1986); it reflects the notion that teaching goes beyond attaining in-depth knowledge of a given area of content. Pedagogical content knowledge reflects an individual's abilities at effectively communicating content knowledge to others in ways that are understandable. This communicating is accomplished via various avenues, including but not limited to modeling, hands-on practice, exercises, etc.(Shulman, 1987). Given its importance, PCK stressed at all academic levels; purposeful practices are what foster higher-order thinking, while purposeless "activities" focus on rote memorization (Zohar, 2004) and are

often fostered by the presumption that instructors are merely deliverers of knowledge rather than learners (Suoranta & Moisio, 2006). It has been inspired by ideas that creating pedagogy for teacher education to help teachers develop the per-formative aspects of teaching through carefully selected and specified instructional activities will create stronger, more skilled teachers (see Grossman et al., 2009; Grossman & McDonald, 2008, Lampert & Graziani, 2009). Shulman (1987) also defines seven categories of knowledge to provide a framework for teacher knowledge which are:

- Content knowledge
- General pedagogical knowledge e.g. classroom control, using group work
- Pedagogical content knowledge
- Curriculum knowledge
- Knowledge of learners and their characteristics
- Knowledge of educational contexts e.g. universities (schools) and the wider community
- Knowledge of educational ends purposes and values

Each of these 'knowledge' is worthy of lengthy debate. However, initially Pedagogical Knowledge (PK) Content Knowledge (CK), Pedagogical Content Knowledge (PCK) and Curriculum Knowledge are of most interest significant. Thus, an effective teacher has a wide-ranging repertoire of different teaching and learning models, strategies and techniques and knows how to create the right conditions for learning. The choice is determined by the nature of the learning objective. Finally, pedagogy and practice provides guidance on the

relationship between pedagogic approaches (teaching models), teaching strategies, techniques and methods of creating the conditions for learning in order to inform lesson design. In the 21st century, Technological Pedagogical Content Knowledge (TPACK) identifies as the knowledge that teachers need to teach effectively with technology. The TPACK philosophy extends *Shulman's (1987) idea of PCK as* Pedagogical content knowledge is the distinctive bodies of knowledge for teaching. It represents the blending of content and pedagogy into an understanding of how particular topics, problems or issues are organized, presented and adapted to the diverse interests and abilities of learners, and presented for instruction.

At the heart of the TPACK framework, is the complex interplay of three primary forms of knowledge: Content (CK), Pedagogy (PK), and Technology (TK). The TPACK approach goes beyond seeing these three knowledge bases in isolation. TPACK also emphasizes the new kinds of knowledge that lie at the intersections between them, representing four more knowledge bases teachers applicable to teaching with technology: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and the intersection of all three circles. Thus, effective technology integration for pedagogy around specific subject matter requires developing sensitivity to the dynamic, transactional relationship between the components of knowledge situated in unique contexts. Individual teachers, grade-level, university-specific factors, demographics, culture, and other factors ensure that every situation is unique, and no single combination of content, technology, and pedagogy will apply for every teacher, every

course, or every view of teaching in the universities. Notwithstanding, according to Shulman (1987), highly competent teachers are often likened to symphony conductors or choreographers, who are capable of flexibly calibrating instruction to meet the needs of their students, in accordance with specific subject matter and an array of educational purposes.

TPACK is not a new idea, nor is it owned by anyone. A range of other scholars have argued that that knowledge about technology cannot be treated as context-free, and that good teaching requires an understanding of how technology relates to the pedagogy and content. The TPACK framework is gaining popularity amongst researchers and scholars. This makes tracking the progress of TPACK difficult, but for those getting started, the seminal description of TPACK (by that particular name) can be found in *Mishra & Koehler (2006)*. In 1987, Shulman claimed that the emphases on teachers' subject knowledge and pedagogy were being treated as mutually exclusive. He believed that teacher education programs should combine the two knowledge fields. To address this dichotomy, he introduced the notion of *pedagogical content knowledge* (PCK) that includes pedagogical knowledge and content knowledge, among other categories (Hlas & Hilderbrandt, 2010). His initial description of teacher knowledge included curriculum knowledge, and knowledge of educational contexts.

So far the researcher of this study understands, pedagogical knowledge means the ‘how’ of teaching, generally acquired through education coursework and personal experiences. Content knowledge, on the other

hand, is the 'what' of teaching. It is different from the knowledge of a disciplinary expert and from general pedagogical knowledge. In Shulman's (1987) view:

> *Pedagogical content knowledge is a form of practical knowledge that is used by teachers to guide their actions in highly contextualized classroom settings. This form of practical knowledge entails, among other things: (a) knowledge of how to structure and represent academic content for direct teaching to students; (b) knowledge of the common conceptions, misconceptions, and difficulties that students encounter when learning particular content; and (c) knowledge of the specific teaching strategies that can be used to address students' learning needs in particular classroom circumstances. In the view of Shulman (and others), pedagogical content knowledge builds on other forms of professional knowledge, and is therefore a critical—and perhaps even the paramount—constitutive element in the knowledge base of teaching (Rowan et al., 2001. p. 2).*

However, PCK is concerned with the representation and formulation of concepts, pedagogical techniques and knowledge of what makes concepts difficult or easy to learn, knowledge of students' prior knowledge and theories of epistemology. It also includes what the students bring to the learning situation that might be either facilitative or dysfunctional for the particular learning task at hand. This acknowledges students' strategies, prior conceptions (both "naïve" and instructionally produced); misconceptions about a particular domain and potential misapplications of prior knowledge. Therefore, PCK represents the blending of content and pedagogy into an understanding of how particular aspects of subject matter are organized, adapted, and represented for instruction. Shulman (1987) argued that having knowledge of subject matter and general pedagogical strategies, though necessary, were not sufficient for capturing the knowledge of good teachers. To characterize the complex ways in which teachers think about how particular content should be taught, he argued for 'pedagogical content

knowledge' as the content knowledge that deals with the teaching process, including *"the ways of representing and formulating the subject that make it comprehensible to others" (p. 9).* If teachers were to be successful they would have to confront both issues (of content and pedagogy) simultaneously, by embodying *'the aspects of content most germane to its teach ability'* (Shulman, 1987, p. 9). At the heart of PCK is the manner in which subject matter is transformed for teaching. This occurs when the teacher interprets the subject matter, finding different ways to represent it and make it accessible to learners.

In relation to the idea, the notion of PCK has been extended (and critiqued) by scholars after Shulman (for instance see Cochran, DeRuiter, & King, 1993; van Driel, Verloop, & De Vos, 1998). In fact, Cochran, DeRuiter, and King (1993) offered the following definition of PCK:

> *The transformation of subject matter for teaching (Shulman, 1987) occurs as the teacher critically reflects on and interprets the subject matter; finds multiple ways to represent the information as analogies, metaphors, examples, problems, demonstrations, and classroom activities; adapts the material to students' abilities, gender, prior knowledge, and preconceptions (those pre-instructional informal, or nontraditional ideas students bring to the learning setting); and finally tailors the material to those specific students to whom the information will be taught (emphasis in original, p. 264).*

Shulman proposed multiple lists in different publications, that lack, in his own words, *'great cross-article consistency'* (Shulman, 1987; p. 8). The emphasis on PCK is based on Shulman's acknowledgment that,

> *Pedagogical content knowledge is of special interest because it identifies the distinctive bodies of knowledge for teaching. It represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction" (p. 8).*

Moreover, the emphasis on PCK is consistent with the work of many other scholars and recent educational reform documents. Since its introduction in 1987, PCK has become a widely useful and used notion. For instance in the area of science education scholars such as Anderson and Mitchner (1994); Hewson and Hewson (1988); Cochran, King, and DeRuiter (1993); Hume and Berry (2010); and professional organizations such as the *National Science Teachers Association* (NSTA, 1999) and *National Council for the Accreditation of Teacher Education* (NCATE, 1997) have all emphasized the value of PCK for teacher preparation and teacher professional development. An analysis of *'Teacher Educator's handbook: Building a knowledge base for the preparation of teachers'* (Murray, 1996) shows Shulman as the fourth most cited author of the close to 1500 authors in the book's author index with an overwhelming majority of those references made to this concept of PCK (Murray, 1996, referred by Segall, 2004). The notion of PCK, since its introduction in 1987, has permeated the scholarship that deals with teacher education in general and the subject matter education in particular (See for example, Ball, 1996; Cochran, King & DeRuiter, 1993; Grossman, 1990; Ma, 1999; Shulman, 1987; Wilson, Shulman, & Richert, 1987). It is valued as an epistemological concept that usefully blends together the traditionally separated knowledge bases of content and pedagogy.

Diagrammatically, we can represent Shulman's contribution to the scholarship of teacher knowledge by connecting the two circles, so that their intersection represents Pedagogical Content Knowledge as the interplay between

pedagogy and content. In Shulman's words, this intersection contains within it, "the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations - in a word, the ways of representing and formulating the subject that make it comprehensible to others" (Shulman, 1987, p. 9).

Although Shulman did not discuss technology and its relationship to pedagogy and content, it does not believe that these issues are considered unimportant. Rather, the intent is to now bring explicit attention to these issues by considering how technology interacts with pedagogy as Technological Pedagogical Knowledge (TPK), with content as Technological Content Knowledge (TCK), and jointly as Technological Pedagogical Content Knowledge (TPCK). Then, the scholars have developed the idea on TPACK.

The TPACK includes the Technological Knowledge (TK), Pedagogical Knowledge (PK) and Content Knowledge (CK) for effective teacher. This, TPACK model has limitations for focusing on cognitive domain though it carries the psychomotor domain. Thus, given the drive towards professionalizing and enhancing practices in HE, it has become crucial to examine current professional development scope, to explore practice of teaching and learning, and to develop the professional development and pedagogy (PDP) practice through technology model impacts on the way to PDP.

2.3.2 Global Cultural Flows and Pedagogic Dilemmas

Given the fluid and fluctuating character of globalization processes, nobody can assume that any one pedagogic approach or design is always automatically liberatory or empowering. As globalization processes increasingly unsettle about teacher, student and pedagogical strategies, the researcher suggests that communicative relations in contact zones in classroom will need to be re-negotiated, re-worked, and re-made in new and contingent ways exacerbating the 'post-method condition' referred to by Canagarajah (2002, p.140). What matters increasingly is how pedagogy and pedagogical strategies are evoked, by whom, for what purposes and with what potential consequences in specific classrooms (see Clifford, 1997). For teachers, it is timely to critically engage with such questions because 'globalization changes the conditions in which language learning and language teaching take place' (Block & Cameron, 2002, p.2).

Foundation preparatory programs can be theorized as global education contact zones (see also Canagarajah, 1997). Contact zones are spatial, temporal locations that have already been constituted relationally and which enter new relations through historical processes of displacement (Clifford 1997, p.7). Location refers to 'an itinerary rather than a bounded site - a series of encounters and translations' in space and time (Clifford 1997, p.11). In these locations or contact zones, people with disparate historical trajectories and pedagogical identities 'meet, clash, and grapple with each other, often in highly asymmetrical relations of domination and subordination' (Pratt 1992, p.4). These asymmetrical power relations, are not only historically constituted

as the aftermath of colonialism, imperialism and slavery, but are reconstituted and contested in day-to-day pedagogic interactions. The teachers and students who meet in these contact zones are active agents who produce, co-construct and challenge the design of these programs in and through day-to-day pedagogic interactions.

In recent times, Western universities have become zones of escalating cultural contact as increasingly large numbers of students from former colonized nations enroll in these institutions to acquire a Western education. The initial contact zones of Foundation training programs are relatively recent pedagogic innovations designed to accommodate encounters between people with diverse historical trajectories, cultural identities, and linguistic repertoires in Western higher education institutions. Consequently, global education contact zones are 'not only what practitioners are teaching about, but what they are teaching in' (Bizzell, 1994, p.166). These programs appear to be relatively standardized across Western nation states such as the UK, US, Canada, Australia and New Zealand (Levin, 2001). Although academic preparation programs have been designed to improve articulation between overseas school systems and university disciplines (Humfrey, 1999), they appear to be based on notions of acculturation and/or syncretism - concepts of culture that have been challenged in recent years (see Appadurai, 1996; Castells, 1997; Clifford, 1997; Hall, 1996; Pratt, 2002; Shome & Hegde, 2002). Teachers employed in these programs appear to act as cultural informants socializing non- Western students into the norms or standards of Western scholarly conduct. For example, Foundation training programs

across the Western higher education sector offer at the point of reception into university teachers. In addition, Foundation training programs provide prerequisite disciplinary specific pedagogic knowledge and skill. Teachers at the front- line of globalization may have to take account in day-to-day pedagogic encounters. Rather, classrooms are likely to be sites of struggle and contestation over the selection and enactment of curricula and teaching strategies.

Independent of this, research has evidenced that some collegiate faculty hold negative attitudes about pedagogical training and its associated skills; some faculty engage in non-course–related tasks while planning, indicating that planning does not require a great deal of concentrated effort (Stark, 2000). Many faculty also lack training in the art and science of teaching, lack significant time to focus on pedagogy given the multitude of their obligations, work with administrators who put little to no focus on pedagogy, and/or abjectly rely on content knowledge, the latter of which provides faculty with a self imposed right to spend less time preparing to develop thoughtful and purposeful lessons. Although it may not directly address all of these concerns, collaboration with respect to pedagogy allows individuals to enhance and strengthen their pedagogical skills, and thus should be taken advantage of when opportunities to do so arise (Crow & Smith, 2005; McDaniel & Colarulli, 1997).

Individual teacher's beliefs are strong indicators of his/her instructional classroom practices. These beliefs can be thought of as guiding principles

teachers hold to be true that serve as lenses through which new experiences can be understood. When people believe something is true, they perceive information supporting that belief. What teachers do in the classroom is said to be governed by what they believe, and these beliefs often serve to act as a filter through which instructional judgments and decisions are made (Pajares, 1992; Cantu, 2001). Research has indicated that teachers possess a vast array of complex beliefs about pedagogical issues. Accepting the nature and role of these beliefs is essential to understanding the choices and decision these teachers will make. It has become widely recognized that the teachers' pedagogical beliefs play a central role in their teaching practices (Handal & Herrington, 2003, Salmon & MacCyvers, 2001), where these beliefs are manifested in the teaching methods, in choosing the subjects and activities, decision-making, and evaluation in the classrooms (Borg, 2001).

From the viewpoint of Mansour (2008) and Richards (1998) the teachers' beliefs are described as being the most valuable in the psychological composition of the teacher. Tatto & Coupland (2003) believe that there is a pressing need to define the concept of teachers' beliefs, while recognizing that there is a difficulty in identifying a clear definition of the beliefs due to the conflict of views of researchers and intellectuals. Barcelos (2003) sees that the beliefs are a form of thoughts that cover all matters that we do not have a sufficient knowledge about but we have enough trust to work on them. Haney, Lumpe & Czerniak (1996) define beliefs in the teaching environment as: the teacher's contentions, and his/her viewpoints on teaching and learning. On the other hand, Ghaith (2004) sees that the teachers' beliefs are holistic

conception of several dimensions related to the beliefs on education and teaching, curricula and the teaching profession in general, and that such beliefs form the 'education culture' which affects pedagogical objectives and values.

By reviewing the previous definitions, the researcher believes that the teachers' beliefs are a set of ideas roote in the psychological and mental content of the teacher and play a central role in guiding his/her teaching behavior. As a result of establishment of the beliefs in the teacher's personality, researchers (Pajares, 1992; Fullan & Stegelbauer, 1991) find that some researchers describe the teachers' beliefs as solid, resistant to change and work as a watchdog for every new knowledge, they also work as barriers to changes in the teaching practices.

Richardson (1996) pointed that teacher's beliefs come from three sources: personal experiences of the teacher in general and teaching in particular, teacher's experience as a student and the teacher's knowledge of the school courses. This experience, according to Lortie (1975) represents the acquisition of the teaching profession through direct observation, as it provides the teachers with information related to the teaching profession. It also helps them in the formation of specific hypotheses on how teaching should be. From the viewpoint of Tsui (2003), the perceptions and presumptions the teachers receive from this source may be considered a very strong influence in affecting their pedagogical beliefs. Whereas Fang (1996) focuses on a group of factors related to school in the formation of teachers'

beliefs, the administrative support, attitude of colleagues, university atmosphere, students' abilities and backgrounds in addition to the rules and regulations that applied in a particular universities.

Researchers have showed a wealth of evidence that teachers' beliefs affect their classroom practices. Pajares (1992) summarized the results of research on teachers' beliefs by indicating that there is a strong relationship between pedagogical beliefs of teachers, their planning for teaching, teaching decisions and classroom practices. He adds that the pedagogical beliefs of teachers before the service play a central role in the explanation of knowledge and teaching behavior when joining the teaching profession. In his opinion, these beliefs are the strongest factors through which we can predict the teaching behavior. Ernest (1998) also says that teachers' beliefs have a strong effect on the teaching practices by converting those beliefs into a practical reality. In the same context, Clark & Peterson (1986) see that teacher's beliefs are a rich store of knowledge that may affect teaching plans and thoughts.

There is an increasing interest in studying the relationship between teachers' beliefs and their classroom practices. Although some studies (Parmelee, 1992; Van Zoest, 1994; Nespar 1987) have shown that the teachers' classroom practices were inconsistent with their beliefs, some researchers found that the teachers' beliefs played an important role in the classroom practices. Brophy & Good (1986); varella (1997); King (2002) and Farrow (1999) found that teachers' beliefs affect their teaching abilities. Cronin-Jones

(1991) also found that there are four main categories of teachers' beliefs that strongly affect the curriculum implementation process. These beliefs are: beliefs on how students acquire knowledge, beliefs about the teacher's role in the classroom, beliefs related to the level of the student's ability in a particular age group and beliefs about the relative importance of the content topics. If the individuals are not able or are unwilling to describe their beliefs accurately, this can lead to an error in judging the factors affecting their behaviors effectively. Mansour (2008) sees that although there is a lot of research which indicates that the teachers' practices in the classrooms are affected by their beliefs, there is still a need to examine teachers' beliefs to clarify how they affect their practices. In the domain of social studies there is a growing need to study the beliefs of the teachers to understand the factors that affect their classroom practices.

Academics' beliefs about student learning, motivation, intelligence, the make-up of the student body, the most effective form of curriculum, and other such beliefs play an important role in the way they conceptualize and approach their practice. This filter shares a relation to the 'conceptions' and 'beliefs' literature examined earlier in this report. It is a highly agentic filter, and one susceptible to ideological positioning. This filter is structurally informed by dominant themes in higher education, such as 'deep-surface' learning, the effects of the widening participation agenda, and generally 'folk' beliefs about students' laziness, instrumentalism, inability to concentrate, the nature of what being a 'good' or a 'bad' student is, and so on. These beliefs led to approaches which could sometimes be deleterious. They adopted piece-meal

approaches to teaching and assessment in order to address what they perceived as negative attributes or attitudes in their students.

2.3.3 Change Practice in Higher Education

Changes in higher education (HE) including funding, competition amongst institutions, increased use of technology and a shift to learner-centered education are combining to modify the roles of both universities and staff. The changing environment is forcing higher education institutions (HEI) to rethink their practices in teaching, research and knowledge management. As students learn at different rates and are on different levels even at same ages, implying that university teachers cannot treat all students the same. Unfortunately, teachers are regrettably ignorant about the choice and use of pedagogical methods which are suitable for an education that relies more and more on higher level cognition and interpersonal abilities. This is because in many countries, in applying for a university teaching position, an applicant needs not to present any evidence of teaching ability. A Ph.D or M.Phil and background discipline degree or its equivalent is the key criterion usually required to show scholarly competence, but nothing is required to demonstrate pedagogical competence, a competence in the very skills one is expected to use on the job. While universities recruit first class graduates as lecturers, concerns have arisen over their capacity to pass on knowledge to students. Without high-quality initial training, teachers largely teach the way they were taught. It is difficult for them to adapt and adopt learner-centered pedagogy. However, the intellectual competence and pedagogical competence are two different qualities. One cannot be an outstanding teacher

without thorough knowledge of subject matter; but to possess that knowledge does not guarantee the ability to communicate it to a student. Therefore teachers should be taught teaching methodology, lecture room control, marking etiquette, and research supervision and communication skills. Similarly, explains that if undergraduate education is to be enhanced, faculty members, academic and students affairs administrators must devise ways to deliver undergraduate education that is as comprehensive and integrated as the ways students actually learn.

Given this scenario, provision of continuous professional development for university teaching staff is no longer debatable. Teaching in higher education requires skills that can no longer be left to experience but best developed through formal training to meet new demands. This is because professors cannot master effective teaching and learning on their own initiative at a reasonable speed. Critical information must be imparted to employees to ensure that they meet their responsibilities. It contends that teachers should be able to learn how to learn, adopt new methods of teaching, facilitated by the new technology. Yet, not all teachers, especially in higher education, are adequately prepared to meet the diverse needs of today's students.

The researcher of this study strongly agrees with Haggis (2006) who claims teachers in higher education must create pedagogical situations in which learners are able to utilize their own experiences and knowledge to explore and critically analyze such situations. This is why the university teachers need to explore their capability and capacity through pedagogic training. It is

because teacher competence is especially complex to study and describe due to the multifaceted nature of the role and the intricacy of cognitive skills required when teaching effectively. Categories of highly skilled teachers' knowledge base include content knowledge, general pedagogical knowledge, curricular knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts (including university governance, finance, and community culture), and knowledge of educational ends and purposes according to philosophical and historical grounds (Shulman, 1987). This is comprised of knowledge of learners and their developmental and social contexts (including knowledge of how people learn, human development and the cultivation of language), knowledge of teaching (including teaching subject matter, teaching diverse learners, assessment and classroom management), knowledge of subject matter and curricular goals (including education goals and purposes for skills, content and subject matter) and the intersection of all three (Darling-Hammond & Bransford, 2005).

Therefore, the categories of a highly skilled teachers' knowledge base are analogous and encapsulate the many things that an educator needs to know. On the whole, skilled teachers in universities portray self-confidence, view their classroom as a community of thinkers, deftly exploit opportunities to cultivate positive relationships with their students, instruct in a student-centered fashion, demonstrate subject area mastery, and contribute to the field as a whole via leadership and service (Smith & Strahan, 2004). However, highly skilled teachers are one of the single most important influences on

student success (Kane, Rockoff, & Staiger, 2007). Class size and other salient variables do not impact students' learning trajectories as much as the quality of their teachers (Kane, Rockoff, & Staiger, 2007). In addition, teacher-based influences impact students' performances throughout a significant span of their university careers (Sanders & Rivers, 1996). Teachers facilitate the process whereby students cultivate habits of mind and knowledge schemes that are prerequisites for success, meaningful contributions and prosperity in an open, technological world (Darling-Hammond, 1997). This makes effective teacher training of paramount importance in the cultivation of an educated citizenry within this country.

The highest performing countries in educational achievement -- Finland, Sweden, Singapore, Hong Kong and Korea - have all make extensive teacher training a priority. Again, this illustrates the strong, positive relationship between well-executed teacher training and high-level student learning. In addition, a full fifteen to twenty hours per week is allocated for collaborative planning and professional development in those countries. This practice stands in stark contrast to the three to four hours per week typically allocated to educators working in the United States. Consistent with the multifaceted support and compensation given to teachers in high-performing countries, is the practice of conferring financial incentives to those willing to serve students in more disadvantaged locations. These programs vary tremendously, yet each moves prospective teachers into full-time paid teaching positions before they have completed the requirements for licensure.

Where traditional teacher training programs instituted by schools of higher education require student-teachers to know theories of learner development, cognition, pedagogy, and technology alternate route programs cover the 'no-nonsense' tools of teaching such as classroom management. Some 'fast-track' training programs require just four to eight weeks of pre-service training. Most of the programs are very practical and generic; little focus is placed on cultivating pedagogical content knowledge with technology. Strongly related to the issue of teacher quality and retention is the research showing traditional teacher training as a whole, to be flawed (Levine, 2006; Darling-Hammond, 1997; Darling-Hammond, 2008). Specifically, such training is often inconsistent, conceptually loose, poorly evaluated, and designed in an arbitrary manner (Levine, 2006). Thus, the challenging time came to the front of educators in Bangladesh, for uplifting the quality of university education in the country. Therefore, the researcher presupposes that thoughtful pedagogical practice should be included in higher education as much as it is in K–12 classrooms in Bangladesh. Effective and purposeful collaborative efforts provide faculty with opportunities to better develop their pedagogical practice. The pedagogic training programs might be in-service or pre-service set for the university teachers as Shulman (1987) regards general pedagogical knowledge as the broad principles and strategies of classroom management and organization that appear to transcend subject matter.

Though limited, the literature on pedagogical practices in higher education, which lacks consensus regarding its measures and operationalization (Stierer & Antoniou, 2004), clearly suggest that there is a dearth among higher

education faculty who appreciate pedagogical practice. Overall, teaching practices utilized in higher education vary across disciplines, as the content of the discipline tends to underlie course planning decisions; however, practices are also influenced by institutional and instructional settings (Stark, Lowether, Ryan, & Genthon, 1988). Independent of this, research has evidenced that some collegiate faculty hold negative attitudes about pedagogical training and its associated skills; some faculty engage in non-course–related tasks while planning, indicating that planning does not require a great deal of concentrated effort (Stark, 2000). Many faculty also lack training in the art and science of teaching, lack significant time to focus on pedagogy given the multitude of their obligations, work with administrators who put little to no focus on pedagogy, and/or abjectly rely on content knowledge, the latter of which provides faculty with a self-imposed right to spend less time preparing to develop thoughtful and purposeful lessons. Although it may not directly address all of these concerns, collaboration with respect to pedagogy allows individuals to enhance and strengthen their pedagogical skills, and thus should be taken advantage of when opportunities to do so arise (Crow & Smith, 2005; McDaniel & Colarulli, 1997).

However, the activity of teaching at public university level is for a long time taken for granted and seen as unproblematic - a function performed by experts in their fields of research who seemed de facto qualified to pass on their knowledge to future generations. This partly explains the scarcity of research on teaching in HE until today in Bangladesh. However, in a context of increased massification, teaching has become an activity at the same time

more complex (directed at an increasingly diverse body of students in increasingly 'flexible' learning environments), more problematized (through educational development and targeted funding initiatives), and more managed. Given the drive towards professionalizing and enhancing practices in HE, it has become crucial to examine teaching and learning, and to assess how the context of practice impacts on the way academics conceptualize and approach teaching. Apprehending teaching practice in broader sense has yielded additional useful and realistic knowledge about teaching and learning that can inform understandings of the pedagogic field, policies regulating practice, and the central functions of universities.

Technology and pedagogy are converging on the learning landscape with a possible collision with cultural and traditional dispositions which dominate the current approach of curriculum delivery, caused by the digital difference between students and teachers. An indication that many academics, including teacher trainers and teachers, have not fully embraced new trends in the higher education curriculum, as well as curriculum delivery, is an advocate for pedagogical transformation.

Discussion in several articles on pedagogical integration of ICT in HE curriculum delivery points to pedagogical transformation or pedagogical change of teacher and teacher trainers, a change from 'teacher-centeredness' or the traditional approach of lecturing, to that of a student-oriented approach or constructivism framework. The traditional way of teaching in this context refers to a system where the teacher is at the centre of the learning process, and gives lectures and expects the student to absorb and to regurgitate and

reproduce, while the constructivist frame advocates that students be at the centre of learning, actively constructing their own knowledge and thus taking responsibility for their learning. Although some authors claim that a constructivist view is necessary for the integration of technology in the classroom, there is no empirical evidence presented in those articles (Enochsson & Rizza, 2009).

In order to understand the demands of pedagogical transformation in the present digital environment, it is imperative to compare the traditional pedagogical system to the current emerging pedagogical trend. The table below, as identified by Thijs, et al., cited in Tinio (2012) is a comparison of the two pedagogies within identified frames.

Table 1: Pedagogic transformation

Aspect	Traditional Pedagogy	Emerging Pedagogy
Active	-Activities are prescribed by the teacher -Whole class instruction -Activities are monotonous -Pace set according to program	-Learners determine activities -Small groups oriented -Variation in activities -Learners determine pace
Collaborative	-Individualistic -Homogenous groups -Self-supporting	-Team work promoted -Heterogeneous groups thus cultural integration supporting each other
Creative	-Regurgitated/Reproductive learning -Apply established solutions to problems	-Productive learning attained -Find new and varied solutions to problems
Integrative	-No link between theory and practice -Separate subjects -Discipline-based -Individual teacher	-Integrated theory and practice dominant -Integration of subjects -Thematic -Collaborative / team teaching
Evaluative	-Teacher directed, controlled and centred -Summative	-Student-centred -Diagnostic

The table 1 presents emerging pedagogy with the new challenges and pedagogical transformation dilemmas for university teachers, including teacher trainers and other academics of tertiary institutions. The paradigmatic shift in the 21st century, where students demand more in terms of digital disposition places lecturers and academics alike in digital predicament. This paradigmatic shift furthermore raises concerns regarding the exercise of the authority of the lecturer in the classroom, from being a teacher-centric curriculum deliverer to adopting a student-centered approach allowing for global learning and teaching- a reality of pedagogical transformation.

To set minds at rest, Larson (2008) has postulated a return to a more traditional approach to teaching, despite the increased technology used, illustrating the use of interactive whiteboard (IWB) and power point presentations. Voogt, cited in Law, Pelgrum, & Plomp, (2008) has found a persistent traditional dimension in the distribution of responsibilities between teacher and student when analyzing data from SITE 2006, though regular engagement with ICT seems to contribute to a change in practice in a constructivist paradigm. It is apparent that the majority of the tools used in curriculum delivery are limited, such as presentation tools and information searching and evaluation resources which support traditional transfer pedagogy.

To promote innovative pedagogical use of ICT in HE classroom, teachers' professional development is a necessity to influence student teachers during their training and support their future innovative use, as well as effective

pedagogical integration. Shuldman (2004) has concluded from research that the impact of ICT integration on students' learning will be negligible unless teachers evolve towards a clear and comprehensive understanding of technology and its role in instruction, which is what, is expected from any instructional resource or tool. Therefore, professional development with pedagogical strategies of integrating ICTs, in instruction for effective quality teaching and learning, cannot be overlooked. Therefore, the study aims to explore the present status of professional development, pedagogical practices, and technology in university education for proposing a 'new program model of PDP' for university teachers in Bangladesh.

2.4 ICT integration in Higher Education

The 21st century is characterized as being a knowledgeable age, prompting many educational institutions, particularly the tertiary system, to consider capacity building, skills development and knowledge construction as a requisite in preparing students for the digital environment. Thus, the introduction of new technologies into mainstream university education is expected to penetrate and transform teaching and learning across the curriculum (Hennessy, Ruthven & Brindley, 2013) including social sciences, and education. Much evidence indicates that technology has great potential to increase learners' motivation, link learners to various information sources, support collaborative learning, and allow teachers more time for facilitation in classrooms (Moallem, 2003; Roblyer, Edwards, & Havriluk, 2004; Wilson & Lowry, 2000). Integrating ICT into teaching and learning has therefore

become a great concern for many educators. Easy access to knowledge, creation and preservation of knowledge systems, dissemination of knowledge and better knowledge services should be core concerns of a country. Getting access to higher education has been a right of every citizen of the country.

Thus, in Bangladesh ICTs have become a driving force of educational reform for quality education and they are an integrated part of national education policies and plans. The ICT in Education Policy focuses ensuring a productive 21stcentury ready workforce and improving curriculum, pedagogy and teacher's capacity building to ensure quality education for all by the use of technology.

The government has taken various ICT infused initiatives for improving primary, secondary and higher education system. Other organizations are also working to supplement government's goal and exploring innovative solutions. In this circumstances, this sub-sections to review literature about technology in higher education, what is working and why, and what are some of lessons that have been learned. In this regard, researcher would like to expect an investigation the published knowledge on the integration of technology to support learning in higher education.

Depending on the scope of content covered, ICT integration can happen in three areas: curriculum (macro), topic (meso), and lesson (micro), as shown in the following Figure 2.1. ICT integration into the area of a curriculum normally

requires ICT to support a more substantial amount of subject content, such as a complete course containing a number of topics in a specific discipline like social sciences. Examples of such ICT integration are multimedia curricula delivered in CD-ROMs (Wang, 2001) or web-based courses. In the topic area, ICT can be used to cover certain topics within a course. A topic usually involves a series of smaller pockets of knowledge, such as Society or Family division, which are usually interrelated to elaborate concepts. At the micro level, ICT is used to help explain specific knowledge units, such as Society within a single lesson.

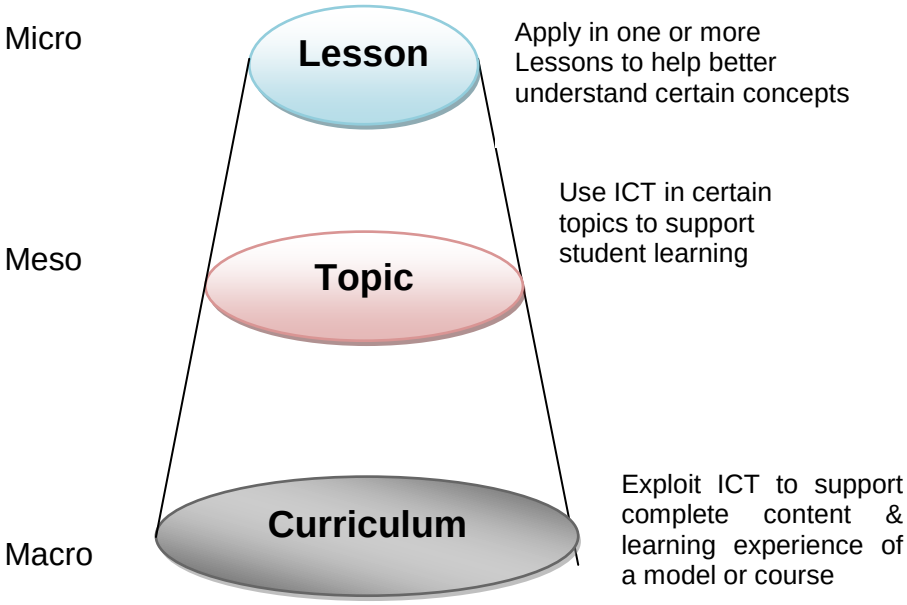


Figure 2.1: Areas of ICT integration

2.4.1 Conceptual Understanding of ICT and its Role in Education

Information and Communication Technology (ICT), in its conceptual stage, was referred to as Information Technology (IT), which Darnton and Giacoletto in Sansanwal (2009) defined as the systematic study of artefacts that can be used as a description of facts, in order to provide meaning or support for decision making. Furthermore, ICTs are artefacts that can be used for the organization, processing, communication and application of information. However, Sansanwal (2000) defined IT as the use of hardware and software for efficient management of information such as storage, retrieval, processing, communication, diffusion and sharing of information for social, economic and cultural advancement. Information technology then leads to the development of Websites, and provides facilities for chats, e-mail, and surfing. However, IT was limited to a textual mode of transmission of information, though not only in the textual forms such as audio, video or any other media needed to be transmitted to the users. Thus, the emergence of ICT expands IT beyond the textual, to new inclusions such as e-learning, e-Education, e-journal, and third generation mobile resources (Sansanwal 2000) and brings richer materials to the classroom for twenty-first century learning.

Information Communication Technology (ICT) includes any type of software and software related activities such as ICT services, ICT applications, and software products and embedded software. The term 'Information and Communication Technologies' (ICT) refers to form of technology that are used to transmit, process, store, create, display, share or exchange information by

electronic means. This broad definition of ICT includes such technologies as radio, television, video, DVD, telephone (both fixed line and mobile phone), satellite system and computer and network hardware and software as well as the equipment and services associated with these technologies such as videoconference, email and blogs (UESCO, 2007).

Many scholar defined ICT from their own views. In this case, UNESCO (2002), in their publication on *Information and communication technology in education*: *a curriculum for schools and program of teacher development,* described “Information and communication technology, or ICT, is defined as the combination of informatics technology with other, related technologies, specifically communication technology” (P.13). Actually, ICT is the combination of two separate technology Information technology and Communication technology.

Therefore, after one year in Bangkok of Thailand, UNESCO clarifies ICT and gave the definition about Information technology (IT) and Communication technology (CT). Information technology (IT) is the term used to describe the items of equipment (hardware) and computer programs (software) that allow us to access, retrieve, store, organize, manipulate and present information by electronic means. Personal computers, scanners and digital cameras fit into the hardware category. Database storage programs and multimedia programs fit into the software category. Communication technology (CT) is the term used to describe telecommunications equipment, through which information

can be sought and accessed, for example, phones, faxes, modems and computers (UNESCO, 2003).

From the above definition we can get a clear understanding about ICT that, information technologies include computer and others hardware as well as different type of software that helps us to access, develop and present the information according to needs. On the other hand, communication technology helps to exchange information one from others. Today the world became global village so no one can isolate from ICT. It is a great opportunity for educators to develop them and update present situation of higher education in Bangladesh by integrating ICT. However, truly usage of technology at classroom level requires changes of exiting roles of teachers and learners and also the conceptualization of knowledge alongside the teaching-learning process and assessment (Reil & Becker, 2000). In order to successfully integrate computer use, teachers need *'to engage in conceptual change regarding their beliefs about the nature of learning, the role of the student, and their role as teacher'* (Niederhauser, 1999, p.157).

Integration of Information and Communication Technology in Education (ICTE) specifically in teaching and learning is high on the educational reform agenda. Most often ICT is seen as an indispensable tool to fully participate in the knowledge society. Leach (2005) showed its need as 'an essential aspect of teaching's cultural toolkit in the twenty-first century, affording new and transformative models of development'. Emphasizing on this issue also

developing countries are investing in ICT intensively. Especially also Asian governments recognize that this can be the way to enable pupils to connect to knowledge available in the wider world and become active processors rather than passive recipients of this knowledge (Latchem & Jung, 2010). There is a large body of research on factors determining the integration of ICT in education, mainly emerging from research in developed countries. Emerging developing countries can draw on this research. Hawkridge (1990) already advised that nations need to pause for reflection and that policies on integration of ICT in education need to be tested. By all accounts, the outcomes of utilizing ICT for education have been very promising. Innovative tools and technology, coupled with animated, interactive contents and activities have amplified students' attention and interests.

ICTs are contributing significantly on the content of education curricula stems from the ways in which ICTs are dominating so much of contemporary life and work. Already there has emerged a need for educational institutions to ensure that graduates are able to display appropriate levels of information literacy, "the capacity to identify and issue and then to identify, locate and evaluate relevant information in order to engage with it or to solve a problem arising from it" (McCausland, Wache & Berk, 1999). Research on ICT in education reveals that although teachers are gradually starting to integrate ICT into their teaching strategies, significant differences are observed in the way ICT is integrated in the classroom (e.g. Tondeur *et al*. 2008b). Some teachers are intrinsically motivated to use ICT in educational practice, while others do not

share this affinity. For this reason, many researchers have centred on critical teacher-related characteristics associated with educational ICT use such as their 'computer experience' (Bovée *et al*. 2007), their 'innovativeness' (van Braak *et al*. 2004) and their personal 'beliefs about education' (Ertmer 2005).

However, literature attests to the power ICT can have in teaching and learning processes (Fonkoua, 2006; Newhouse, 2002). It has been suggested that using technology well in classrooms can even prepare students to be more effective citizens (John & Sutherland, 2004) in increasingly open and democratic societies. Research in West and Central Africa shows that, ICT for teaching and learning in education environments can contribute to developing a more student-centred approach to pedagogy (ROCARE, 2006). Teachers with pedagogical proficiency who are ready and willing to transmit knowledge and support students to construct knowledge will normally make a difference in any learning process. In this age of ICT and its integration in the educational system, the role of the teacher, just like in the traditional classroom environment, should not be overlooked or underestimated (Boakye and Banini, 2008).

Although the advantages of using ICT in the classroom have been demonstrated in research, barriers or challenges associated with its use still exist. Frederick, Schweizer and Lowe (2006) showed that student mobility, special needs, and anxiety over standardized test results are the main challenges associated with ICT use. These challenges can be solved by

providing more authentic group- and problem-based learning activities, and adequate learning support (Whelan 2008). Whelan (2008) also identified more barriers from the student perspective, including: subpar technical skills that reduce access to ICT in classroom; an insufficient number of academic advisors and lack of timely feedback from instructors; and reduced interaction with peers and instructors. Therefore, the author recommends the following strategies to facilitate the learning process: more induction, orientation, and training for students; an increased emphasis on the importance of instructor access and effective administration; and the expansion of podcasting and online conferencing tools. In general, capacity building, curriculum development, infrastructure, policy, and government support are required in order to lower student barriers and improve the effectiveness of ICT use in the classroom. In addition, Castro Sánchez and Alemán (2011) encourage students to acquire specific technical skills to facilitate learning in ICT environments. Furthermore, barriers to effective technology integration from a teacher perspective include:

- Low teacher expectations and a lack of clear goals for ICT use in universities (Al-Bataineh et al. 2008);
- A lack of teacher collaboration and pedagogical support, as well as a lack of experience among cooperating teachers (Ertmer and Otternbreit-Leftwich 2010);
- Insufficient time to master new software or integrate ICT during a class period (Almekhlafi and Almeqdadi 2010);
- Insufficient skills for managing teaching materials (Frederick,

Schweizer and Lowe 2006);

- Low software competence and habitual ways of conceptualizing what and how students should learn (Goktas, Yildirim and Yildirim 2009);
- Limited knowledge and experience of ICT in teaching contexts (Honan 2008);
- A lack of specific knowledge about technology and how to combine it with the existing pedagogical content knowledge to support student learning (Hutchison and Reinking 2011);
- Excessive focus on teaching technical or operational skills rather than course content (Lim 2007);
- Pressure to improve scores on national examinations (Liu and Szabo 2009);
- A lack of recognition and encouragement of the timely and effective use of ICT (Tezci 2011a);
- A lack of in-service training on the use of ICT (Yildirim 2007);
- Technical problems in the classroom (Yildirim 2007);
- Classroom management with large class sizes (Tezci 2011a);
- A lack of motivation, and technical and financial support (Liu and Szabo 2009);
- Uncertainty about the possible benefits of using ICT in the classroom (Yildirim 2007); and
- Lack of specific and definite ideas about how integrating technology into instruction will improve student learning (Al-Bataineh et al. 2008).
- Support partnerships that help teachers share effective technology

practices and experiences (Ertmer and Otternbreit-Leftwich 2010);

- Provide workshops that allow teachers to reflect upon effective strategies for technology integration into instruction and unveil issues that are central to understanding the process of technology integration into instruction (Almekhlafi and Almeqdadi 2010);
- Offer opportunities to virtually observe teachers who use technology (Frederick, Schweizer and Lowe 2006);
- Augment curricula with technology-enhanced materials (Goktas, Yildirim and Yildirim 2009);
- Provide enough freedom for teachers in selecting and covering curriculum materials (Honan 2008);
- Provide effective, timely, and continuous training to improve ICT skills and manage a technology-rich classroom (Hutchison and Reinking 2011);
- Encourage positive attitudes about the significance of integrating ICT into instruction (Lim, 2007); and
- Provide adequate technical support (Liu and Szabo 2009; Tezci 2011a; Yildirim 2007).

Technology should be used for more than just support of traditional teaching methods (Tezci, 2011a). According to Tezci (2011a), teachers should learn not only how to use technology to enhance traditional teaching or increase productivity, but also should learn from a student-centered perspective how ICT can be integrated into classroom activities in order to promote student

learning. This means that teachers need to use ICT in more creative and productive ways in order to create more engaging and rewarding activities and more effective lessons (Birch and Irvine 2009; Honan 2008). Hence, Castro Sánchez and Alemán (2011) suggested that teachers keep an open mind about ICT integration in classroom. It is imperative that teachers learn new teaching strategies to adapt to the new instruments when teaching with technology.

To address the challenges, Yildirim (2007) suggested that universities need to provide appropriate access to technology. Furthermore, schools and related institutional systems need to employ new policies to involve teachers in the decision-making and planning processes regarding ICT in their classrooms. Lim (2007) conducted a qualitative study examining effective and ineffective ICT integration in schools in order to provide tangible solutions. The results showed that the availability of ICT tools, the establishment of disciplinary and educational principles and procedures, as well as the division of labor among teachers, teaching assistants and students are crucial elements to establishing a well-managed ICT-integrated class. By emphasizing these elements, a learning process that is more likely to engage students in higher-order thinking can be facilitated.

2.4.2 Technology in Higher Education of Developed Nations

New ICT tools impacting the future of higher education will enable more learning opportunities. More universities around the world have recently

provided online courses, online degree programs, and distance learning (Economist Intelligence Unit, 2008). Online courses allow the learners, such as single mothers, working professionals, and non-traditional students, to advance their careers and academic status without disrupting their lives. It is a perfect choice to get a degree, diploma, or certification that they need for their future, without going to classrooms. Some programs mix on-line learning and physical face-to-face learning, called blended learning. In addition to full online course and blended learning, there is flipped learning in which students prepare for classes by watching videos and reading new content as homework, and learn in the classes with project-based learning and personalized remediation. Gonick (2013) states that,

> *'within the next year or two, more than 50 million diverse open educational learners will find compelling motives to access the single largest, dynamic body of student-centered learning materials available'.*

Today, universities' challenges are not only to provide students with satisfactory education in their fields, but also to develop their technology skills and knowledge required in the relative workplaces. Employers expect graduates to have necessary technology skills before starting working in their organizations. Furthermore, considering employability and job-readiness skills, students need to be very familiar with not only collaboration but also independent decision-making through higher education programs with technology. Therefore, the future of higher education needs to prepare learners in the 21st century to be specialized through advanced curricula and teaching methodologies.

The biggest concern among higher education executives is cost. The budget of technologies is diverse depending on school type, such as private and public. Technology consulting, technology coordinator, and universities need to build collaborative teamwork for producing desired budget for fitting each situation and problem (Frazier, 2012). The technology coordinator also collects data as inventory and conducts professional development statistics with the planning committee of organization, assesses administrative, curricular, and infrastructure needs for developing funding that adequately meets the needs (Frazier, 2012). In addition to cost, universities challenge encouraging faculty members to adapt new technology to their teaching style. Not all faculty members follow the latest teaching style with technology, and some faculty members in tenure prefer traditional modes of instruction. They lack educational technology abilities. Experienced faculty members with technologies, who are familiar with the field, can support and stimulate the other faculty members by sharing new insights, values, and behaviors, and informing local digital conversion plans. Additionally, university's challenge for new instructive approaches with technologies is to build strategic leadership, which effectively drives organization, and set organized policies for avoiding a disruptive innovation in ways not anticipated. Higher education executives highly expect university information officers to develop university's key decision-making team, and lead to move the university forward with technology (Economist Intelligence Unit, 2008). A lack of appropriate instructional design staff members and the other technological support issues can delay the adoption of new technologies. Also, the adequate policies need

to be set for preventing students' cheating, plagiarism, and on-line legal issues, and making students to understand intellectual proper right and net-moral. Hence, universities challenged to deal with these situations and barriers are generating opportunities for faculties and university staff members, who have each specific background to support the university innovation to collaborate.

Given the technological innovation, the needs of net generation, and the required 21st century skills from companies around the world, higher education needs to promote educational systems for university innovation. Furthermore, university staff members, such as faculty members and administrators, should be aware of the new technological innovations and the possible impacts on learning opportunities for influencing the future of higher education.

The government in Japan aims to reach higher equipment rates that the other developed countries have achieved, addressing intelligible and visual classes with effective educational technologies such as computers and interactive whiteboards (Oogawara, 2010). The network environments at schools have been rapidly developed, such as intra-school LAN in classrooms and connection to the fast Internet (Oogawara, 2010). Numbers of students per a computer at overall elementary, middle, and high schools are decreasing year by year, and more teachers' official business computers and information management systems have been integrated into schools. Digital textbooks

have shown great impact on the practical use of technologies for teaching and learning in educational environments in Japan (Oogawara, 2010). However, there are still gaps in the maintenance and equipment rates between school regions. Metropolitan districts especially, are lagging behind in computer equipment in schools. Furthermore, Japan is still technically lagging behind in equipment and practical use of educational technology in schools, compared to the United States, the United Kingdom, and South Korea.

With a cross cultural comparison study on the current education state in Japan and the United States, Susono, Shimomura, and Trelfa (2003) revealed the following points; where information technology education conducted at schools in the United States was superior to the one in Japan:

- More connections to the Internet in ordinary classrooms and special classrooms via intra-university LAN
- The number of computers at the university library
- Setting media specialists at universities
- More laptops used by students in a classroom

Also, teacher education colleges in the United States provide pre-service teachers with adequate system infrastructures and services, to which Bangladesh should refer for enhancing the curricula and programs at universities of education. Nagata (2006) reported about electronic teaching portfolios (e-portfolio) in the school of education at University of Wisconsin-Madison, aiming to enact the integration of the online teaching portfolio

system into teacher education programs in Japan. According to her, one of the main purposes of creating e-portfolios was to improve ICT skills. Through the process of creating an e-portfolio, the pre-service teachers can train their necessary ICT knowledge and skills, such as access to the necessary information and creating documents and materials using ICT tools. Additionally, Watari and Nakajima (2007) reported that the Center for Teaching and Learning (CTL) at Stanford University provided all of the faculty members and teaching assistants with effective and flexible Faculty Development (FD). The FD includes sufficient individual support and practical workshops on course design using useful technologies to support learning environments for students. On the other hand, according to Watari and Nakajima (2007), the current FD in universities in Japan is constructed around a lecture meeting style, and the faculty members do not perceive that the FD is meaningful to develop their abilities. Considering these comparisons, it is also obvious that schools and universities of education in Japan are lagging behind in supporting learning environments for all learners, including children, faculty members, and pre/in-servicer teachers, compared to the United States.

However, as noted earlier, more schools and regions in Japan are trying to integrate new technologies and transform learning environments. More teachers and schools have challenged to combine a blackboard and an interactive white board in classrooms for presenting understandable class contents (Shimane Prefecture Educational Center, 2012). In addition to

interactive white boards, teachers who are aware of the effectiveness of educational technologies, also integrate document cameras, digital cameras, video cameras, projectors, digital televisions, notebook computers, digital textbooks, and tablets into their classrooms. A report by Shimane Prefecture Educational Center (2012) also claims that teachers who effectively use ICT for learning are encouraged to take professional development related to ICT practical uses for providing more comprehensible classes with technologies. As an example, the experienced science teachers in a class that uses technology would provide students with visual learning to understand abstract objects and motions through the use of interactive white boards, document cameras, personal computers, projectors, and digital cameras. Another example is with arithmetic teachers, where first-grade students are encouraged to do exercises to increase their proficiency, using personal computers. In a music class by using projector and document camera, instructors reduce time for preparing an enlarged copy and large papers of lyrics and codes. Also, the students can be encouraged to participate in the class activities.

Furthermore, along with popularization of digital textbooks, internet at schools and homes, software for education, and Open Educational Resources (OER), flipped learning courses have become popular from elementary to higher education in Japan (Shigeta, 2013). As noted earlier, flipped learning is that students learn on new contents by digital materials, such as videos, as their homework, and bring the knowledge and ideas to their classes and learn in

the classes by project-based learning, discussion, problem-based learning, and personalized remediation. For the past five years, flipped learning has come under the global spotlight, especially in Western countries. Although the number of the examples of flipped learning is still limited in Japan, several schools and universities currently have integrated it into learning environments (Shigeta, 2013). As a result, in the classes, students could have more time to have collaborative activities among themselves, and enhance their skills and knowledge. The activities increased communications between students and teachers as well. The flipped learning also promoted the progress of the classes. As a result of another example, Hokkaido University could enhance students' discussion performances by integrating flipped learning. Students could be encouraged to attend the course as well (Shigeta, 2013). Thus, the current practices of flipped learning in Japan have clarified that teachers can "humanize classrooms" (Khan, 2011) by using technology, instead of the traditional "one-size-fits-all lectures" where students have no interaction with each other (Khan, 2011).

Universities in Japan have challenged themselves to integrate new technologies into learning environment over the past decades. However, the number of OER in Japanese language is limited, compared with the quality and quantity of OER in Western countries (Shigeta, 2013). Teachers need to enhance their skills to create their own digital materials by such as Camtasia Studio. Service of repository for OER, that the other teachers can access, is also required to promote this innovation. Thus, overall, schools and

universities in Japan are still technically lagging behind in equipment, practical use of educational technology, and learning effective and have several considerations for transferring learning environments with new educational technology, such as cost for technology integration, information-security management, and instructors' expertise in making effective new learning environments.

2.4.3 Technology in Teaching and Learning of Developing Nations

Developing countries are those countries that are economically underdeveloped (Perkins, 2003) characterized by high birth rates, poverty, and reliance on worthy countries. Developing countries comprise countries of Asia, Africa, Oceania and Latin America. These countries generally have weak human resources, low per capita gross domestic product (GDP) and low economic diversification levels among other things (United Nations Conference on Trade and Development, 2001). Of the 49 least developed countries, about 35 are African countries (Tam, 1999).

Developing countries are struggling to get their people out of poverty (Arias & Clark, 2004). Education has been seen as the best way to solve these problems. Even so, developing countries are facing immense problems in areas of education and training. This is against the backdrop of monumental world population growth placing a lot of pressure on teacher training demands as well as infrastructure (Arias & Clark, 2004). According to Arias and Clark (2004), implementation of instructional technology initiatives seems to

respond to some of these problems. Despite possibilities of benefiting from the technology advancement, many developing countries have not derived the necessary gains from these information and communications technologies (ICTs). Many developing countries lack the economy, infrastructure, and expertise needed to introduce and take advantage of ICT (Adeya, 2001). Schachter, Pence, Zuckernick and Roberts (2005), concur with Adeya (2001) by remarking that the main hindrances facing African education system are lack of infrastructure, lack of networking, high telephone and internet costs, limited expertise and skills and lack of enabling national policies.

Statistics show that developing countries are still lagging far behind in terms of accessibility to computers and the Internet (Donner, 2007). In 2002, the number of people with Internet facilities was close to a world total of 99 per 1000. In developed countries 450 people per 1000 had access to the Internet but in developing countries only 2.8 persons per 1000 had internet access (Arias & Clark, 2004). Although introducing and implementing technology initiatives in a developing country is difficult (Arias & Clark, 2007; Donner,2007; Obuobi, Adrion, & Watts; 2006; Rajesh, 2003), “education leaders and practitioners throughout the developing world are increasingly integrating Information Communication Technologies (ICTs) into the process of teaching and learning to improve access to education, or to implement educational reform” (Arias & Dickelman, 2005, p. 1).

Among the challenges associated with the implementation of technology in developing countries, social factors, economic factors, cultural factors, technological factors stand out (Arias & Clark, 2007; Rajesh, 2003). These challenges are felt by policy makers as well as the implementers (Rajesh, 2003). Rajesh identifies three major categories of the challenges in the application of new information and communication technology: people, software and hardware. Of these three factors, the human aspect is deemed the most difficult to address. Surry and Farquhar (1996) concur with this notion when they write: “the design, development, adoption, utilization, and diffusion of technology are inherently social processes” (p. 61). The social factors influence the development, implementation, and spread of technology (Segal, 1994; Surry & Farquhar, 1996). Rogers’ (2003) Diffusion of Innovations theory highlights the significance of social factors in technology adoption. The following section will consequently focus on research conducted in developing countries regarding adoption of information and communication technologies (ICTs).

Studies on Instructional Technology Implementation in Developing Nations In a study that was conducted to explore the diffusion of Information and Learning Technology (ILT) among career and technical educators in Malaysia, results indicated that although many faculty members appreciated the significance of ILT as a vital tool in teaching, only few faculty members used it in actual teaching (Rashid & Gloeckner, 2008). Institutional support was identified as a significant factor in the adoption of ILT. This finding is in line

with assertions made by some other scholars (e.g., Ely, 1999; Lynch, 2002; Butler & Sellbom, 2002).

Additionally, familiarity with technologies played an important role in facilitating faculty members' usage of those technologies (Rashid & Gloecker, 2008). Familiarity may well be linked to some of the perceived attributes outlined by Rogers (2003) such as complexity and compatibility. In a study conducted to analyze problems associated with ICT adaptability in India by Rajesh (2003), results revealed that accessibility issues, cost-effectiveness, user-friendliness and pedagogic value of the technology determine the extent of adoption and integration in teaching. Political issues, administrative factors and economic factors were also seen to greatly impact the diffusion rate and possibilities of integration.

In another study conducted in Thailand by (Intaganok & Waterworth, 2008) to determine the relationship between the attitudes of higher education staff and their skill development in ICT, results showed that low levels of skills in ICT were associated with higher levels of anxiety regarding ICT use. Access to computers and the Internet both at home and office was found to be significantly linked to ICT competence levels which in turn influenced anxiety levels. The findings specifically indicated that ICT competence of staff was greatest in creation and manipulation of files and folders; saving, deleting and printing documents. However, they exhibited weaknesses in use of multimedia, spreadsheets and databases (Intaganok & Waterworth, 2008).

2.4.4 ICT in Education: Bangladesh Perspective

Education For All Global Monitoring Report (2013/14) published that Digital classroom can enhance learning and bridge knowledge and skills gaps among less qualified teachers. It further focused on the Innovation in using technology that can support improving learning by enriching teachers' curriculum delivery and encouraging flexibility in pupil learning. In countries having with low-economy capacity, the availability of ICT infrastructure remained a crucial consideration. Many countries could not support widespread computer-assisted learning because schools are lack internet access or, in some cases, even electricity supply. Though our country-Bangladesh also considered within the list of developing countries (Wikipedia, 2014), our Govt. had taken some firm initiatives by revising ICT Policy (2002) into ICT Policy (2009). In the National ICT Policy (2002) Govt. had not elaborated the necessity of including ICT into education but regulated in a generalized way by deciphering:

> *"To address the issue of deficiency in English and mathematics education, a crash programme shall be taken up to train teachers. To ensure standard and quality of ICT education, a national certification and accreditation system shall be developed."* (p.04)

Along with in ICT Policy (2009), in the chapter of 'Actions and Funding', under the Strategic theme of 4.4, It has been deciphered precisely:

> *"Ensure ICT literacy in a cost-effective way for primary and secondary students and teachers, since ICT skills have been recognized as part the 21st century basic skills."* (p.27)

Under the strategic theme: 4.5, Policy also targeted to install computers, LAN, reliable Internet connectivity with reasonable speed and multimedia teacher

training content for all Secondary Teachers' Training Colleges and for all Primary Teachers' Training Institutes, like PTIs, URCs and NAPE; with a special focus on Mathematics, Science and English. In this regard, higher education sector has also been emphasized under UGC (2015) of Higher Education Quality Enhancement Program (HEQEP).

To fulfill the objective set-up In the ICT policy Government has taken initiatives under the care of Access to Information (A2I) Program of Prime Minister's Office. There is a scope of innovation fund for universities to submit any kind innovative projects within the university and country wide. But it is still needed proper monitoring and more funding to achieve exact objectives for higher education. The concentration of the authority of the educational institutes and of the educations experts on proper ICT integration is yet to be promoted in the satisfactory level by making them discern the learning outcome with integration of motivation for ICT in HE.

With the announcement of creating a Digital Bangladesh by 2021, government agencies, international agencies, NGOs and private agencies have initiated ICT interventions in education sector of Bangladesh. In this regard, ICT has been given considerable importance from the Prime Minister's Office in the last few years. A National ICT Task Force has been formed which is headed by the Honorable Prime Minister. The Executive Committee of the National ICT Task Force, headed by the Honorable Principal Secretary, administers the implementation of decisions taken by the

Task Force. A program called the Support to ICT Task Force (SICT) has been initiated, with financial support from the Government, to provide implementation and monitoring support to the Task Force. The Ministry of Science and Technology has also been renamed as the Ministry of Science and ICT and has been entrusted the duty of working as the primary hub for ICT policy and implementation in the country. The Ministry of Science and ICT has come up with a comprehensive ICT Policy in 2009. The Ministry of Post and Telecom has also come up with a National Telecom Policy in 1998 (time for a revised policy). ICT Task Force has representation from several important ministries, academia, NGOs, and the ICT-related private sector. For the successful policy implementation and strategic partnership, different agencies GoB working on the same tray for achieving the goal of digital Bangladesh in education sector. Such as; the Ministry of Science and ICT formulated ICT Policy 2002, revised in 2009 and facilitated computerization at government institutions and schools. The Ministry of Post and Telecommunications established balance development and maintaining of telecommunication infrastructure. The Ministry of Education developed, revised and reviewed Curriculum for ICT education and facilitating Computerization in schools. Simultaneously, the Ministry of Law, Justice and Parliamentary Affairs formulated ICT-related laws, the Planning Division, Ministry of Planning Secretarial supported to the National ICT Task Force and hosted the Support to ICT Task Force (SICT) Program to implement objectives of the ICT Task Force, particularly in areas of e-Government, the Bangladesh Telecommunication Regulatory Commission (BTRC) provided

regulation of telecommunications providers and acted as Licensing authority and the Bangladesh Computer Council (BCC) provided ICT Training to government officials and citizens, incubated for software companies, advisory support to government institutions regarding ICT, providing connectivity to ISPs, Standardization of ICT issues, such as keyboard and Curriculum for ICT education. The Ministry of Posts and Telecommunications and The Ministry of Information and Communication Technology has been merged as the Ministry of Post, Telecommunications and Information Technology. Recently, a separate ICT Ministry has been established for achieving digital Bangladesh.

On behalf of the GoB, the University Grants Commission (UGC) has been working with the public universities in this connection. It is the statutory apex body in the field of higher education in Bangladesh. The primary objectives of the UGC are to supervise, maintain, promote and coordinate university education. HEQEP programs has been designed to meet the globalization challenges raising higher education quality to the world standard. Bangladesh Government (GoB) has taken initiatives to develop the quality of tertiary education. Govt. plans to prepare university graduates in such way that they can successfully compete in the context of international knowledge society. Accordingly, the Ministry of Education, with the assistance of the World Bank, has undertaken a Higher Education Quality Enhancement Project (HEQEP). The project aims at improving the quality of teaching-learning and research capabilities of the tertiary education institutions through encouraging both innovation and accountability and by enhancing the technical and institutional

capacity of the higher education sector. The University Grants Commission of Bangladesh is the implementing agency of the project. A HEQEP Unit has been established in UGC for implementation, management, monitoring and evaluation of the activities. The Higher Education Quality Enhancement Project (HEQEP) consists of four components. The most important component is Academic Innovation Fund (AIF), a fund designated to be awarded to participating public and private universities as non-refundable grant to promote innovative proposals for quality enhancement. The general objectives of AIF are to establish enabling conditions to improve the quality and relevance of teaching, learning and research and to introduce an efficient instrument for the allocation of public funds with emphasis on innovation and accountability. The Objectives of AIF is To improve the institutional academic infrastructure by generating better access to knowledge and information, by integrating ICTs and laboratory technologies into learning, and by modernizing support facilities for student.

Thus, ICTs are recognized by the world leaders as a key development enabler in World Summit on Information Society (WSIS) in Geneva in 2003 and in Tunis in 2005 (Tunis Commitment). In the Poverty Reduction Strategy of the country called National Strategy for Accelerated Poverty Reduction (NSAPR) 2009, ICTs were similarly identified and given due importance. The current government's Digital Bangladesh by 2021vision 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 the people for climate change.

Bangladesh Government has started to look for effective initiatives at all levels of education system in the country, by observing the tremendous pace of optimum learning outcome by students in a number of countries. Through targeting on these remote areas in Bangladesh Bairagi, Rajon & Roy (2011) have focused on the background of increasing digital divide needs to be addressed by the uniform and well-administered implementation of ICT. The Bangladesh's 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 teachers' training in ICTs, deployment of virtual ICT teachers and web-based teaching learning materials. Government rephrased the policy in 2015 but incorporated all the policy taken in 2002 and revised in 2009. Some of the specific policy statements relevant to education Bangladesh government took into ICT policy (2009, p.06)) stated below:

- Enhance the quality and reach of education at all levels with a special focus on Mathematics, Science, and English.
- Boost use of ICT tools in all levels of education, including ECDP, mass literacy, and lifelong learning.
- Initiate diploma and trade courses to enable ICT capacity building for teachers. Teacher training institutes to be empowered with ICT capacity to meet the challenges.

- Promote distance education, set up institutes and infrastructure for e-learning training programs.
- Universities, Bangladesh Institutes of Technology and colleges, both in the public and private sectors, shall be strengthened to produce ICT graduates in four-year Computer Science and/or Engineering courses.
- Diploma and Trade Certificate in ICT will be offered in both public and private institutes including Polytechnics.
- Use the potential of ICT for delivery of distance education to help stretch the country's limited teaching resources and ensure quality education to all.
- Preference shall be given to ICT literate candidates for the purpose of recruitment in public offices. ICT-literacy shall also be evaluated in the Annual Confidential Report (ACR) of officials to ensure utilization of ICTs in the public services.

But still, obviously, long way to go to achieve the policy targets. From the policy perspective, it needs to consider the following laggings:

- Due to lack of adequate number of ICT tools in universities and schools at rural level and lack of sufficiently trained teachers, most students do not get enough exposure to ICT.
- Not enough jobs are getting created to absorb the ICT-trained human resources.

- Much of the government ICT training is isolated and project-based – a coordinated national effort to build ICT capacity in the government is yet to be implemented.
- ICT-based education is not a policy priority.
- Excessive emphasis on computerization without sufficient consideration to enabling factors such as teachers training, curriculum modernization etc.
- In government recruitment and promotion, ICT skills is still not taken into consideration

The National Education Policy 2010 paid particular attention to the ICT integration in education. The National Education Policy 2010 has clearly recognized that the country needs to develop Information and Communication Technology (ICT). It needs competent manpower to meet up internal demands. Moreover, there is a high demand of skilled manpower abroad and this would gradually increase over the coming years. And export of skilled manpower can increase our foreign currency earning. Development programs could be undertaken to build up competent manpower in view of national and international demands. Thus, the Policy (p.9) identified the objective of education in relation to ICT of Bangladesh as bellow:

- to ensure skills of high standard at different areas and levels of education so that learners can successfully compete at the global context;

- to attach substantial importance to information and communication technology (ICT) along with Mathematics, Science and English in order to build up a digital Bangladesh based on knowledge-orientation and cultivation of ICT;
- to extend the use of information and communication technology (ICT) instrumental in educational process at every level
- In every curriculum of education, highest importance will be given to achieving proper competencies. Computer and ICT will be included as compulsory subjects in vocational and technical education curricula.

Moreover, the Policy targeted the Strategies (p.40) for ICT in Primary, Secondary, Vocational and Technical education and Higher Education as follows:

- Right from the Primary level of education, computer will be used as a tool of teaching.
- All students will be computer-literate before they reach the secondary level.
- Secondary education level students are supposed to study computer science along with mathematics and science.
- In vocational and technical education, there must be the scope of learning graphic design, multimedia, animation, CAD/CSM etc.
- In order to increase interest in information technology, IT Olympiad can be organized at national and international levels.

- Computer Science and Information Technology departments of international standard curriculum will be opened in all universities.
- Teaching of computer science and information technology of high standard will be regularly updated at the university level and students will be offered necessary training to build them up as skilled IT manpower.
- Opportunities will be created for the students of science and other subjects to appear at national level examination system so that they can become IT manpower. If necessary, training courses will be arranged for them.
- Open University will be built up as a true digital university enriched by facilities of IT.
- A system will be developed so that all graduates can learn basic skills in computer by 2013.
- An Information Technology University (ITU) will be established for the purpose of training of teachers engaged in teaching of IT in higher education and to facilitate research in this field.
- Coordinated steps will be taken in order to expand IT education and computer science at the grassroots level and to establish IT training centers and tele centers at district and upazila/thana levels.
- Training will be arranged to develop computer skills for government/ non-government officials and policy-makers

- Computer skills will be treated as an additional qualification for recruitment in third class or higher position in government/non-government institutions.

The interface between education and ICTs has been noticeably absent from Bangladesh's Education Poverty Reduction Strategy Paper (PRSP) through ICT. There is one reference to ICTs in the entire document and that relates to distance learning (as cited in Tandon, 2006, p.39):

> *"Investing resources in new technologies: A high priority should be given and resources invested for taking advantage of new information and communication technologies for making learning resources available, improving quality of instruction, and increasing flexibility of academic offerings in higher education institutions. Bangladesh Open University, providing an avenue for higher education to the less well off, should adapt to methods and programs to realize the potential of the new technologies. The Internet, e-mail, teleconferencing and videodiscs should be put to use in distance education programs of the Open University to offer diversified opportunities to learners and to bring the world of learning to Bangladesh. The Open University and other institutions should use on-line course materials from international sources. Easy Internet access for faculty and students should be standard provision for higher education institutions"*

Although the research in the field of ICT in education deserves special attention only very few studies or research efforts have been carried out. None of the potential agents in Bangladesh such as the government, local or international organizations have focused on this topic in the past. However, insights from such studies are necessary to be able to make sound decisions regarding the implementation of policies to ensure the effectiveness of ICT in education. Therefore, further research is required to cover all relevant aspects of ICTE programs and establish and disseminate best practices. Given the current circumstances and specialization, there are few organizations

particularly suited to carry out few researches, namely the National Academy for Educational Management (NAEM), Institute of Education and Research (IER), Dhaka University, UNESCO, Save the Children, Bangladesh Bureau of Educational Information & Statistics (BANBEIS), Bangladesh Research and Education Network (BdREN) and Trans Eurasia Information Network (TEIN3).

2.4.5 Technology Plan, Models and Theories for Higher Education

Given the effectiveness, necessity, and benefit of educational technology, teachers and school leaders should be encouraged to improve their instructional technology knowledge and skill and to build new university system and curricula with technologies (Bradshaw, 1997). University and Schools should collaboratively create organized educational technology plans declaring school visions and goals on technology integration. This technology plan could support the teachers on taking initiative to create change. Visualizing, planning, and financing a technology for classrooms are necessary steps for long-term technology plans to successfully achieve the goals. Furthermore, technology plans need to be created in terms of a partnership of university staff, students, parents, and community since each of the stakeholders has important roles to collaboratively accomplish school missions and transform learning.

One of the categories in a technology plan should be for teacher educational technology. Teachers and university staffs who generate a technology plan need copious time to develop and master the effective practical use of

technologies for reflecting on technology-based learning approaches through effective teacher professional development (TPD) for ICT (Vrasidas & Mclsaac, 2001). In-service teachers are required to take time and have incentives to participate in lifelong professional development activities based on the technology plan. Unless teachers are comfortable with technologies and familiar with strategies to usage strength of each technology for instructional programs, teaching and learning environment are not likely to change (Vrasidas, & Mclsaac, 2001). Therefore, teachers need to strive to cultivate technology integration knowledge and skill along with educational technology plans.

Educational technology plan ideally includes summary, stakeholder groups, vision statement, mission statement, goals, objectives, need assessment, general issues, conclusion and recommendations, acceptable use policy, technology and learning statement, technology standards, technology models for teaching and learning, staff development, technical support, budgets, and timeline. However, they are diverse depending on universities and authorities. The positive impacts on technology integration could depend on an educational technology plan for universities staff members, students, school areas, and communities.

Building upon Ely's (1999) eight conditions is the RIPPLES model developed by Surry, Ensminger and Jones (2003). The RIPPLES model was developed based on results of a survey which was conducted with college deans to

determine the deans' opinions regarding factors that affect integration of technology. The results of the "Dean's questionnaire" and a review of diffusion literature were used to develop the RIPPLES model –which is a model for integrating instructional technology into higher education (Surry, 2002). Following is a detailed description of the seven components of the RIPPLES model:

- ***Resources***

To implement any endeavor, technology integration inclusive, resources are needed. Resources are the financial resources required in developing and using technology for teaching and learning.

- ***Infrastructure***

Infrastructure is the second component of the model. It refers to the organizational technological capabilities, like hardware, software, facilities, and network capabilities within the college (Surry, Ensminger, & Jones, 2005). They identify five elements of infrastructure: teaching element, production component, communication element, student element and administrative element.

- ***People***

The people component refers to the role played by people in an organization, as they try to integrate technology, in teaching and learning (Surry, 2002). The needs, values, experiences and hopes of those involved are vital in deciding to integrate and technology in teaching and learning.

- ***Policies***

The policies component of the model refers to the need written or unwritten rules, practices and regulations that govern the organization, required to facilitate integration efforts (Surry, 2002). According to Surry, since most policies were made long before technology became a part of the organization, many of them may work to prevent or inhibit successful technology integration. Policies regarding retention, tenure and promotion could be used to boost up the integration of technology in teaching and learning.

- ***Learning***

The learning component refers to role played by technology in advancing education goals of an educational institution (Surry, 2002). According to Surry, technology can enhance instructional goals through pedagogical benefits by allowing teachers and students interact in ways that facilitate cognitive or motivational outcomes.

- ***Evaluation***

The evaluation component refers to the assessment of technology in relation to learning goals, technology, technology plans, and costs and benefits of implementing technology (Surry, 2002).

- ***Support***

The support component deals with the need for a support system for those involved in integrating technology in teaching and learning (Surry, 2002). Surry identifies four aspects of support faculty, staff and students may get to

help them in the integration efforts: training support, technical support, pedagogical support and administrative leadership.

In conclusion, a number of different stage models have been provided by different theorists that relate to technology adoption and implementation. Generally, these models begin with information gathering and attitude formation; then to decisions to use or not use the technology and finally to implementation and integration of new practice into traditional ways of doing things (Wilson et al., 2000). Other models have employed stages that adopters evolve through and have developed implementation strategies that capitalize on those stages to better target prospective adopters and implementers passing through various stages. While these models seem to differ in their focus, they either address the potential adopter or the adoption or implementation process.

2.5 Change and Change Management: What and How it is

Change refers to a relational difference between states; especially between states before and after some event. It is something that presses us out of our comfort zone. In this respect, change initiation is a kind of warfare. The Shorter Oxford Dictionary (1973) offers several definitions of change, ranging from the 'substitution or succession of one thing in place of another' to the 'alteration in the state or quality of anything'. Changes can be large or small, evolutionary or revolutionary, continuous adjustment or fundamental, incremental and transactional or transformational. But Greenwood and

Hinings (1996) argue that organizations must accommodate change (institutional expectations) in order to survive. They suggest that there is a force for inertia (the inability of organizations to change as rapidly as their environment) that limits the possibility for incremental change (discussion later), and that this resistance to change will be strongest when the network of mutual dependencies is tightly coupled. They also claim that radical change in tightly coupled fields will be unusual, but if it does occur it will be revolutionary. However, in loosely coupled fields radical change will be more common and will tend to be evolutionary. In tightly coupled field, a change in one component automatically means changes in others and loosely coupled refers to an approach to reducing the risk that changes within one component will create unanticipated changes within other components. The simple way to think about coupling is this: how easy is it to change something, for example, component A without having to change component B in an organization? If many changes in A require something in B to be changed, they are tightly coupled. If A can be changed easily without B being touched, then they are loosely coupled.

Gersick (1991) identifies three sources of inertia: cognitive frameworks, motivation and obligations. He argued that organizational members often develop shared cognitive frameworks. With regard to change, attention may be restricted to searching for ways of doing things better. Motivational barriers to change are often related to the fear of loss. Obligations can also limit change. Tushman and Romanelli (1985) note that even if a system can overcome its own cognitive and motivational barriers against realizing a need

for change, the networks of interdependent resource relationships and value commitments generated by its structure will often prevent it being able to achieve the required change. But when a discontinuous change occur the inertia triggers some form of revolutionary change. Burke (2002) speculates that more than 95 percent of organizational changes are, in some way, evolutionary. Orlikowski's (1996) assumption is that this can lead to sufficient modification to achieve fundamental change. Continuous change, when it occurs, involves the continuous updating of work processes and social practices. Weick and Quinn (1999) observe that the distinctive quality of continuous change is the idea that small continuous adjustment, created simultaneously across units, can cumulate and create substantial change. They identify three related processes associated with continuous change: improvisation, translation and learning.

However, *incremental change,* on the other hand, focuses on change for 'doing things better' through a process of continuous tinkering, adaptation and modification. Nadler and Tushman (1995) make the point that incremental changes are not necessarily small changes. A key feature of this type of change is that it builds on what has already been accomplished and has the flavor of continuous improvement. It can be cumulative, and over time, can lead to an organization transforming and re-inventing itself. However, incremental change is incapable of fundamentally transforming an organization. The concept of t*ransactional change* is associated with 'fine tuning' (see Figure: 2.2), with how the organization functions within an existing paradigm. It emphasizes single (doing things better) rather that double-loop

(doing things differently - or doing different things) learning. In this respect, the focus of attention needs to be the structures, management practices and systems that affect the work climate, which in turn impact on motivation and performance. Finally, t*ransformational change* involves a break with the past, a step function change rather than an extrapolation of past patterns of change and development. Weick and Quinn (1999) and Gersick (1991) refer to this kind of change as revolutionary, but most writers - such as Tichy and Devanna (1986), Kotter (1999) and Burke and Litwin (1992) use the term "transformational change." This kind of change involves doing things differently rather than doing things better. It might even mean doing different things (double-loop learning). It involves a change in the organization's culture. It also calls for a change in the organization's mission and strategy. Where the need is for this kind of change, attention needs to be focused on the transformational factors highlighted in Figure: 2.3. The two dimensions of change discussed so far - the extent to which change involves incremental adjustment or transformational change and the extent to which the organization's response to change is proactive or reactive provide useful models of organizational change.

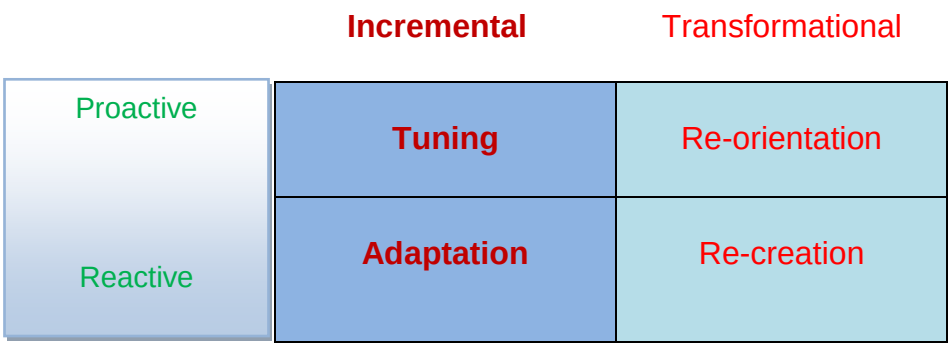


Figure 2.2: Types of organizational change

Source: Adapted from Nadler, D.A., Shaw, R. and Walton, A.E., *Discontinuous Change* (1995), p.24

Nadler *et al.* (1995) identify four types of change which are tuning, adaptation, re-orientation and re-creation. They define tuning as change that occurs when there is no immediate requirement to change. It involves seeking better ways of achieving and/or defending the strategic vision. This approach to change tends to be initiated internally in order to make minor adjustment. *Adaptation* refers to an incremental and adaptive response to a pressing external demand for change. It might involve responding to a successful educational strategy adopted by an institution. This kind of change is not about doing things in fundamentally different ways or about doing fundamentally different things. *Re-orientation* is initiated in anticipation of future opportunities or problems. The aim is to ensure that the organization will be aligned and effective in the future. *Re-creation* is a reactive change that involves transforming the organization through the fast and simultaneous change of all its basic elements. Nadler and Tushman (1995) stated that it inevitably involves organizational frame-breaking and the destruction of some elements of the system. While tuning and adaptation can involve minor or major changes, they are types of change that occur within the same frame. Re-orientation and re-creation, on the other hand, are types of change that involve transforming the organization and bending or breaking the frame to do things differently or to do different things.

Whatever the nature of change, Lindblom (1994) of Yale University points out that initiating change is a competitive, often hostile activity. Anyone who wants change has to overcome massive inertia. He notes that while it is possible to find policies or changes that benefit almost everyone, changes ordinarily

benefit some people by injuring others, particularly where change is feared and members of the organization are not made to see its possibilities. He argued that the best way to block change is to render people unaware of possibilities. Lindblom (1994) also defines collective defensive behavior within the organization as impairment and states that this kind of impairment is an instrument of resistance to change. He suggested that if we want changes, we have to engage in a political struggle; no important changes will come without it. Argyris (1994) of Harvard University agrees with this diagnosis of impairment as an obstacle to change. He describes it as 'cognitive impairment' that is a result of striving for control that results in defensive reasoning. However Leithwood and Jantzi (1991) offer the concept of transformational leadership as a necessary changing agent for what teachers do. After persuading others of the need for change it is necessary to decide who will, at least in the first instance, facilitate the change. At this point Hayes (2007, p101-102) argues that:

> *The change agent could be an insider, a member of the system or sub-system that is the target for change, or an outsider. An insider might be chosen in situations where:*
> - *the person responsible for managing the unit or sub-system that is to be the initial target for change is committed to acting as change agent*
> - *it is agreed that a particular insider has the time, knowledge and commitment to manage the change more effectively than an outsider*
>
> *An outsider might be chosen where:*
> - *there is nobody on the inside who has the time or competence to act as facilitator/change agent*
> - *it is felt that all of the competent insiders have a vested interest in the outcome and therefore might be less acceptable to other parties than a neutral outsider*

The researcher of this study is agreed with the views of Hayes (2007), who mentions that if the change agent is a member of the target system, entering the change relationship may simply involve agreeing with members of the

target system that 'there is problem or opportunity that requires attention.' The change agent can often be managed informally and without too much difficulty. But if the change agent is an outsider, the establishment of a change relationship can be a more complex, and, sometimes, a more formal, process. In the context of this study, researcher plans to be the change agent in Bangladesh as he has insights into the culture and needs of the organization.

However, Hayes (2007) also emphasizes that effective change agents require, (and can be helped to acquire), conceptual models and action tools/interventions, change management skills and confidence in their own ability to make a difference. In relation to conceptual models, change agents (or managers) require a range of concepts and theories to identify the kind of change that confronts them, to understand the process of changing and to help them identify what needs to be attended to if they are to achieve the desired outcomes. Change agents need to be able to communicate, offer leadership, work with the team, confront, negotiate, motivate and manage relationships with others effectively. It is important for the change agent to keep in mind that he/she is not doing something *to* others but is doing something *with* others. Burnes (2004) argues that, despite the constraints faced, change agents have a far wider scope for shaping decisions than most organization theories acknowledge. It is also important for change agents to consider how they manage change effectively, as the success of implementing change is generally associated with those who facilitate the process. The change agent is defined here as a manager who seeks 'to reconfigure an organization's roles, responsibilities, structures, outputs,

processes, systems, technology or other resources' (Buchanan and Badham, 1999, p. 610) in the light of improving organizational effectiveness. The role of change agents as facilitators is extensively discussed within a rational framework. For example, Buchanan and Boddy (1992) list the competencies of effective change agents as clarity of specifying goals, team building activities, communication skills, negotiation skills and 'influencing skills' to gain commitment to goals. It can be deduced from these arguments that limitations in change management are associated with the managerial perceptions of the need for change, the opportunity to change and about the way to change. This renders perceptions, beliefs and assumptions of change agents as vital aspects to be understood.

However, organizational development researchers such as French and Bell (1990) advocate, managerial preferences, normative patterns and political contingencies can affect the process of change. In practice, most managers are problem-resolvers who do not pretend to be objective in their decision making. They justify their conclusions by citing lack of time or information or the complexity of a situation (see Senge et al., 1999). Organizational members, who are not only potential change-makers, but also recipients of organizational change, are likely to be more questioning about the value of change. Thus, it is suggested here that an internal change agent is needed. Finally, 'If change is a process of taking an organization (or a nation) on a journey from its current state to a desired future state and dealing with all the problems that arise along the journey, then change is about leadership as well as management' (Gill, 2003, p. 309; Stewart and Kringas, 2003, p. 676; Ellis,

1998, p. 231). The agents need to explore their understanding of effective leadership and change management.

According to Burnes, (1992), change management is not a distinct discipline with rigid clearly defined boundaries. Rather, the theory and practice of change management draws on a number of social science disciplines and traditions. A great deal has been written about change management, both from a theoretical and applied perspective. This is because, while change is not a specific discipline, it acknowledges the reality that organizations operate in changing environments. Basically, change management is about improving, enhancing, modifying or transforming organizations in order to maintain or increase their effectiveness. Agents (managers) are responsible for ensuring that the institution or the part of the institution they manage performs effectively. To do this, they need to know what constitutes effective performance and have some means of assessing whether or not the organization as a whole, or their particular sub-system, is performing effectively. They also need to know, if the quality or performance is unsatisfactory, what elements of the organization can be changed in order to improve quality or performance and what steps they can take to secure these changes. As Kezar and Eckel (2002, p. 299) pointed out, change 'often invites risk and an uncertain future or destination, so having a compelling reason for change and a proposed direction is crucial'. So change management might sometime be seen as risk management.

However, change management involves a broad spectrum of processes and professional specialties aimed at introducing change successfully. Baldridge and Deal (1975, p.1) effectively describe that:

> *Change or innovation is a topic constantly discussed in the educational world. Schools, colleges and universities are always changing, either by deliberate design or by whim or fate. Students, faculty members, administrators and the general public are concerned about the ability of educational organizations to adapt in the face of new demands, and, as a consequence, the careers of educational administrators reflect their ability to stimulate and manage change.*

Organizations and their staff also want to know how they can cope with change. But the management of change poses many challenges for change agents and managers. Managers have to manage people who are upset by change at a time when the same changes are increasing their workloads. It is over thirty-seven years since Toffler (1970) discussed three aspects of change and speculated about how they would affect people in his book 'Future Shock'. He argued that, in many respects, 'future shock' is similar to culture shock, but with one very important difference - there is no going back. In times of change, organizational members have to cope with multiple and concurrent changes. At such time, having to cope with other peoples' emotional response to change is an added burden that is sometimes difficult to manage. Burnes, (2005, p. 85), observes that:

> *Managing and changing organizations appears to be getting more rather than less difficult, and more rather that less important. Given the rapidly changing environment in which organizations operate, there is little doubt that the ability to manage change successfully needs to be a core competence for organizations.*

But, ironically people 'both fear and seek change,' (Senge, 1990). So like a crisis, change presents both risk and opportunity. Cooper and Argyris, (1998), argue that change can take many forms; it can be planned or unplanned,

incremental or radical, and recurrent or unprecedented. However, change management might be a planned process where it refers to the broad processes for managing organizational change. It encompasses planning, oversight or governance, project management, testing, and implementation. An important issue in change management is evaluation of the change. The researcher would argue that an evaluation or assessment of the change project after implementation is required in order to reflect on the success or failure of the process and to take any remedial action, re-think and reapply where appropriate. However, the challenge for today is not so much to plan for change but to learn to live with it, anticipate it and, where possible, capitalize on it, (Clarke and Clegg, 1998).

So, change management means much more than changing organizational charts; it means changing the very nature of organizations and the way(s) in which they function, (Murdoch, 1997) in order to survive in a much stronger position in the increasing competitive world of higher education (Ford, *et al.,* 1996). Knowing what drives change and what impinges on organizational ability to manage change is also important. Gilgeous (1997) presents the following external and internal factors as reasons for the initiation of change programs within organizations: External factors: competitor activities, quality and standards, new technology, changing customer expectations, government legislation and prevailing political values. Internal factors: relating to management philosophy, organizational structure, culture as well as the systems of internal power and control. He further argues that as the relations alter between these factors the organization realizes the need for change.

Dawson (1994) reflects this to a certain degree when he suggests that external and internal triggers of change are, in fact, interdependent. In the view of intention and change, Ford and Ford (1995) argue that intentional management of change occurs when a change agent deliberately and consciously sets out to establish conditions and circumstances that are different from what they are now.

Lewin (1951) provided some useful insights into the nature of change that are very relevant for those who seek to change intentionally. According to Lewin, change is brought about by increasing the forces pushing for change whilst on the other hand, diminishing the forces that oppose or resist change. This argument-led approach to managing change emphasizes the importance of reducing the restraining forces in preference to a high-pressured approach that only focuses on increasing the forces pushing for change. He argued that approaches which involve the removal of restraining forces within the individual, group or organisation are likely to result in a more permanent change than approaches which involve the application of outside pressure for change. Lewin suggested that successful change requires a three-step procedure that involves the stages of unfreezing, moving and refreezing (see Figure: 2.3).

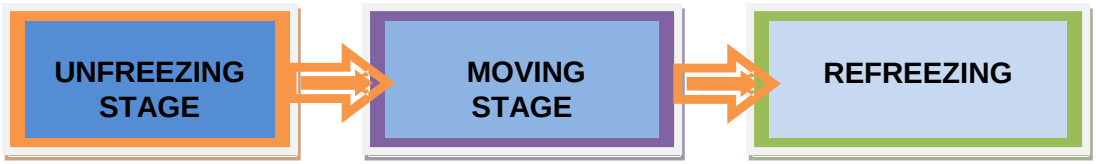


Figure 2.3: Three-stage model of change
(Source: adapted from Lewin's idea)

In recent years, Burnes (2004a, 2004b) observed that the significance of Lewin's work is played down in contemporary organizations. In this regard, Dawson (2003) and Kantor, Stein and Jick (1992) argued that the notion of refreezing is not relevant for organizations operating in turbulent environments. However, as Burnes (2004a) observed the strength of Lewin's contribution to the theory and practice of organizational change is when this three step model is viewed as part of an integrated theory of change.

Lippitt, Watson and Westley (1958) expanded Lewin's three-stage model. They divided the moving phase into three sub-stages: the clarification or diagnosis of the client's problem, the examination of alternative routes and goals and intention for action and the transformation of intentions into actual efforts. Egan (1996) also developed a model based on Lewin's three stages which also focused on the moving phase.

Beckhard and Harris (1987) offer a three-stage model which focuses on defining the present and future, managing the transition and maintaining and updating the change. However, Hayes and Hyde (1998) presented a model (see Figure: 2.4) which provides a conceptual framework for thinking about the management of change. They draw attention to some critical aspects of the change process and incorporate many of the features of the process models reviewed above.

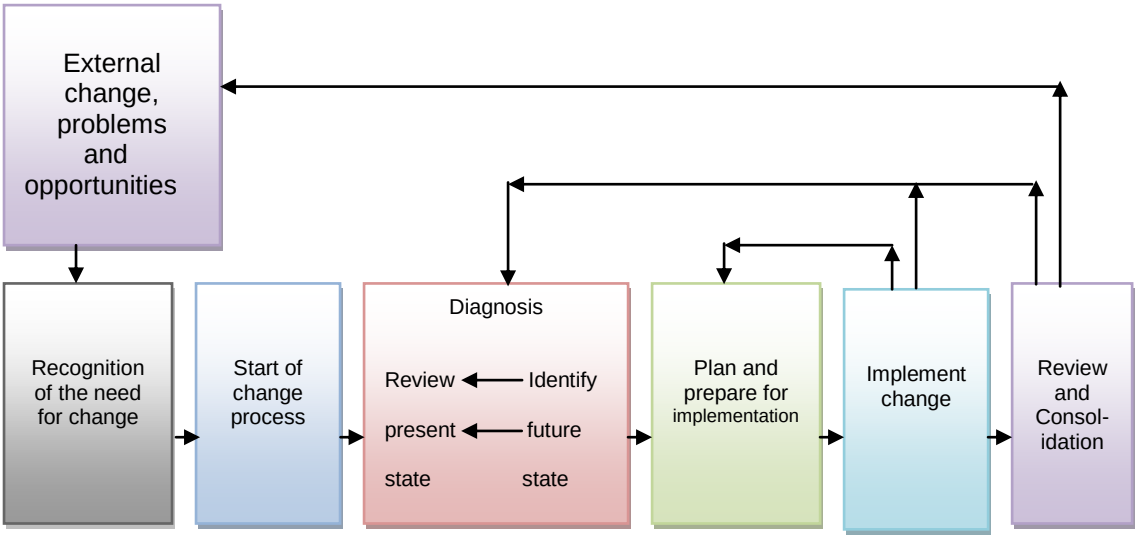


Figure 2.4: Steps in the change process
Source: adapted from Hayes and Hyde (1998).

The above model (Figure: 2.4) suggests that change is a rational and linear process. The loop between 'review' and 'external forces' represent the view that change rarely involves moving from one steady state to another. Logically, it is an on-going, never-ending process. Often new pressures for change emerge before the current change initiative has been completed. The steps described in the model indicate that a strategy for managing change must also address a number of 'people issues'. These are on-going throughout the process. Change agents or managers need to address these 'people issues' at all stages of the change process. Hayes (2007), Burnes (2004) and Kotter (1990) have identified the following issues that need to be considered:

- Communication
- Political and motivational issues to change
- Power and stakeholder management
- Leadership
- Training and development

- Support for others to help them manage their personal transition
- People interest

However, when developing a strategy the change agent needs to attend to each step in the change process and to the way the overall process is to be managed. It is also important to recognize that there is no one recipe, or prescription, about how change 'should' be managed, that can be applied in all situations. Managing change is a complex process. So the change agent needs to contextualize his approach and develop strategies that accommodate or facilitate any attempt to manage change. Thus, there is evidence to suggest that universal prescriptive models of change management are inadequate to describe the diversity of approaches actually used by organizations (Dunphy and Stace, 1993).

2.5.1 Change Management Requires Transformational Leadership

The importance of leadership to the change management process is underscored by the fact that change, by definition, requires creating a new system and then institutionalizing the new approaches (Kotter, 1995). While change management depends on leadership to be enacted, to date there has been little integration of these two bodies of literature. The key role leaders' play in the change process has been noted by change theorists, yet there is no conclusive research that focuses on this relationship between leadership and change (Almaraz, 1994). Recent theoretical research has attempted to integrate change as a contextual variable influencing transformational leadership (Pawar and Eastman, 1997). Such research focuses on determining when organizations will be more receptive to transformational

leadership and the match between receptivity level and the actual transformational leadership process. However, Pawar and Eastman (1997) do not address the issue of the capabilities of transformational leaders required to carry out the pertinent change process. That is why it is necessary to draw parallels between the change literature and the leadership literature. Specifically, the transformational leadership literature is primarily concerned with the capabilities required to enact change successfully. Tichy and Devana (1990) and Kotter (1990) draw attention to a tension between leadership and management. They argue that management is concerned with maintaining the existing organization. Leadership, on the other hand, is more concerned with change. This creates a tension between 'doing things right' and 'doing the right things'. However, this discussion explores the propositions that managerial work, in times of change, is increasingly a leadership task and that leadership needs to be viewed as a collective process (see Figure: 2.5).

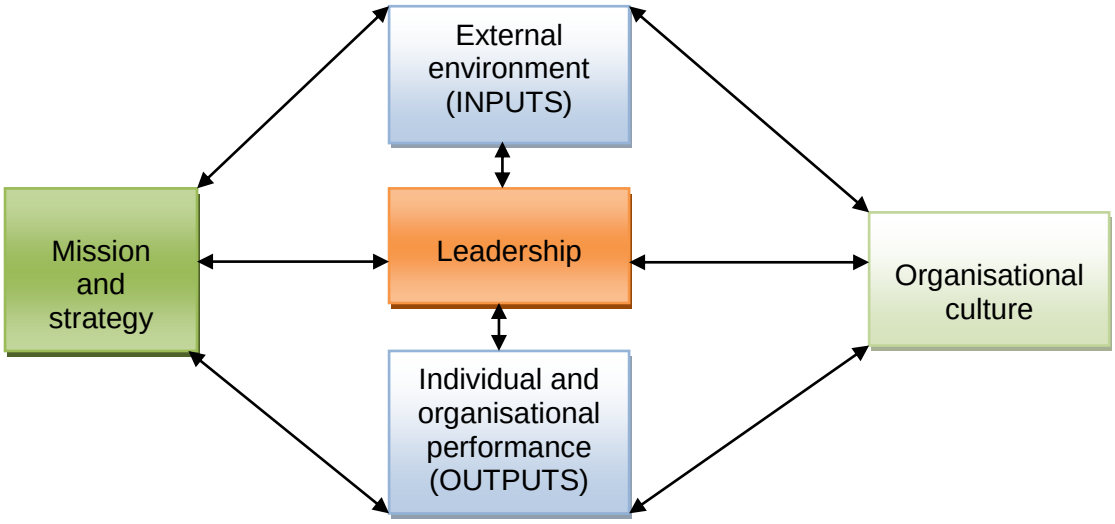


Figure 2.5: The transformational factors for change
Source: Adapted from Burke and Litwin (1992)

One of the most comprehensive leadership theories of organizational transformation is the theory of 'transformational and transactional leadership'.

Burns (1978) developed the initial ideas on transformational and transactional leadership in the political context and Bass (1985) further refined them and introduced them into the organizational context. Transactional leadership develops from the exchange process between leaders and subordinates wherein the leader provides rewards in exchange for subordinates' performance. Transformational leadership behaviors go beyond transactional leadership and motivate followers to identify with the leader's vision and sacrifice their self interest for that of the group or the organization (Bass, 1985). Bass's (1985) concept of transformational leadership includes charisma or idealized influence when followers trust in and emotionally identify with the leader, intellectual stimulation when followers are encouraged to question their own ways of doing things, and individualized consideration that assignments are delegated to followers providing them with learning opportunities. Descriptive research by Tichy and Devanna (1990) shows that transformational leaders engage in a process, which includes a sequence of phases: recognizing the need for change, creating a new vision, and then institutionalizing the change (related to Figure: 2.5). A review of the literature on change oriented or outstanding leadership, which also includes charismatic and visionary leadership (House, 1995), indicates that the ‘majority of the approaches share the common perspective that by articulating a vision, fostering the acceptance of group goals, and providing individualized support, effective leaders change the basic values, beliefs, and attitudes of followers so that they are willing to perform beyond the minimum levels specified by the organization' (Podsakoff et al., 1996, p. 260).

At the same time, according to Bass (1995), charisma, attention to individualized development, and the ability and willingness to provide intellectual stimulation are critical to leaders whose firms are faced with demands for renewal and change. However, now, there is a need to integrate the perspectives of change and transformational leadership to gain a greater understanding of how to effectively enact change. It is my belief that both the leadership and change literatures show that certain transformational leadership qualities are uniquely appropriate for leading certain types of change. For example, research in the leadership area supports the idea that transformational leadership is better for non-routine situations (Bass, 1985). Furthermore, Pawar and Eastman (1997) propose that organizations will be more receptive to transformational leadership when adaptation (as opposed to efficiency) is the goal. In the change literature, the definition of event-based pacing (i.e. centered on maintaining the status quo and achieving specific goals (Gersick, 1994)) may be a better fit with transactional leadership that emphasizes clarification of goals, follower compliance through incentives and rewards, with a focus on task completion (Bass, 1995).

In order to further this argument, the researcher of this study next describes the point to the appropriateness of transformational leadership in enacting change. Transformational, charismatic, and visionary leaders can successfully change the status quo in their organizations by displaying the appropriate behaviors at the appropriate stage in the transformation process. When there is a realization that the old ways no longer work, such leaders may undertake the task of developing an appealing vision of the future. A good vision

provides both a strategic and a motivational focus. It provides a clear statement of the purpose of the organization and is, at the same time, a source of inspiration and commitment. Consistent with Ford and Ford (1994), this view holds that leaders create change by providing a vision that is attractive to followers rather than creating dissatisfaction with the status quo. There is, as yet, no consensus in the transformational leadership literature concerning whether a crisis or dissatisfaction with the status quo is necessary for transformational leadership to occur. Leaders may not need to create dissatisfaction with the present, but instead may provide a vision of a possible future that is attractive and engaging (Kouzes and Posner, 1988).

Even without dissatisfaction or crisis, both literatures suggest it is critical that the leader be a change champion who can assemble and motivate a group with enough power to lead the change effort (Kotter, 1995). The change literature also suggests that a leader's ability to use effectively inducements and interventions that get people to change is only effective if people have an active need that the change can satisfy. As described in the change literature, in order to pull or attract followers to different change possibilities (see Ford and Ford, 1994), the leader must craft an appealing vision that takes into consideration the underlying needs and values of the key stakeholders. Once this vision is developed, the leader must implement the change. This could be done through intellectual stimulation, whereby the leader sets challenging goals for the employees and motivates them to rethink old ways of doing things. The leader frames the change by appealing to follower needs for achievement and growth that induces the follower to find the change

attractive. The process may also be facilitated if the leader shows individualized consideration where he or she provides support, coaching and guidance to the employees. Coaching and guiding behaviors are particularly important in large-scale transformation and in the development of self-managing work teams.

A transformational leader would be a good facilitator of this process by promoting the creation of a culture that encourages team-decision making and behavioral control (Manz and Sims, 1990). At this point, the leader must work at getting large numbers of people in the organization involved in the transformation process. The idea that the transformational leader creates a culture which embraces change is consistent with the change literature research by Brown and Eisenhardt (1997). Their description of the three key characteristics of successful managers in continuously changing organizations proposes that the successful leader creates a system (i.e. an organizational culture) that is neither too rigid (over controlling the change process) nor too chaotic (so the change process falls apart).

However, throughout the transformation process, the leader should set high performance expectations and reward behaviors that are directed toward fulfillment of the vision. It is also important that the leader models the behaviors that are required to institutionalize the change and sets the standards for the rest of the organization to imitate. As Kotter (1995) argues, change sticks only when it becomes ‘the way we do things around here’, when it seeps into the bloodstream of the corporate body. This is similar to

Sastry's (1997) conclusion that enforcing a waiting period after every significant change in strategic orientation is necessary to maintain competence. The transformational leader can play a critical role in communicating how the changes have led to better performance and ensuring that the next generation of top management personifies the new approach (Kotter, 1995).

2.5.2 Change Management for Quality Higher Education

At the end of twentieth century, Barber (1995) outlined his vision for the improvement of teaching and learning in schools and colleges, and raised the notion that an improvement agenda is critical. It also takes as a premise that to improve the performance of the further education system, the threshold of effective management of educational change needs to be raised. To achieve greater effectiveness, there is a need also to develop and raise the standard of effective and responsible leadership (Duignan and MacPherson, 1989). The heart of this should be the encouragement of high-quality teaching (Sharpe, 1986), and the development of organizational culture towards educational excellence through enhancing the growth and development of all those involved in teaching and learning. Thus, the relevance and applicability of the quality philosophy, to the change management processes in the environment of education is apparent.

Previous research initiatives and empirical studies (Harvey and Green, 1993; Saarinen, 1996; West-Burnham, 1992) argued that the idea of quality must inevitably be rooted in the management and operations of schools that reflect

the Higher Education Institution (HEI) for at least three strategic reasons. The pilot study of Cicmil and Kekäle (1997) concluded that change at schools (HEI) originated from two different sources: (1) *From the external context*: redesign of the National Curriculum and assessment/ measurement of performance; requirements for the compliance of schools to various quality assurance system standards, etc. (2) *From within the organization*: changes in actual management structure of a school; new management (individual or collective) initiative and endeavor to change the ways a school operates, in search for higher effectiveness and quality. At this point, it is, again, important to acknowledge that researcher will be carrying out the role of change agent / entrepreneur *from within the organization* when introducing the planned PDP.

However, Cicmil and Kekäle, (1997) argue that the success of the change initiative depends on the level of motivation of individuals to implement the ideas and concept of 'learning and growing on-the-job', i.e. how their goals of achieving 'personal completeness' match with the organization completeness. Change is, from this point of view, seen to 'be able to serve both the individual and the organization to develop' (Reid *et al*., 1992, p. 52). Thus, the effective processes of change management can create harmony and overall completeness. It is essential that management communicate with fellow teachers or colleagues and other employees in the university or school by acknowledging their fears, anxiety and questions, in order to create necessary space for reflection and analysis (see Figure: 2.6). The Figure 2.6 indicates the four key stages of change management process originated by Ford *et al.* (1996, see p. 19-21). The large arrow indicates the iterative nature of the

process. This arrow has been labeled 'Evaluation and review' to indicate that within the process, all stages must incorporate some form of continuous assessment and appraisal. They argued that an HEI or the agents must know where it is going (Direction), the structure where to put in place its vision and its relationships to the organizations, groups and individuals who influence it or are influenced by it (Organization), which core processes needs to be put in place (Processes) and all the institution's resources (Infrastructure) which supports the day-to-day operation.

Figure 2.6: Stages of change management process
Source: Ford et al. (1996)

This change management issue is also emerging in higher education. Holland (1994) has indicated, whilst participation rates in higher education and training have risen over the last decade, the levels of learner achievement remain a critical problem. Fullan (1993) believes that it is important to articulate important educational goals. In achieving these goals, however, they can only rely on those involved in delivering higher education, it means teachers themselves. However, the ability to secure a collective human effort to sustained educational improvement, and to develop a commitment, is heavily

dependent on the nature and quality of leadership, and on the interaction between leaders and members of universities. This leadership is something more than the discharge of administrative functions in educational institutions. As articulated by Kerry and Murdoch (1993, p. 223), 'education leadership is … that part of the management function which provides progress towards new goals in a time of change'. The type of leadership in education (colleges and schools) has been suggested by Handy (1989) as an exemplar of management for organizations of the nineties, particularly those 'knowledge' organizations concerned with information, intelligence and ideas. This raises the question about the kind of leadership which is most successful and relevant to the context of managing educational changes in institutions. Gregory (1996) defines four dimensions of institutional leadership in colleges and universities; symbolic, political, managerial and academic (Figure 2.7).

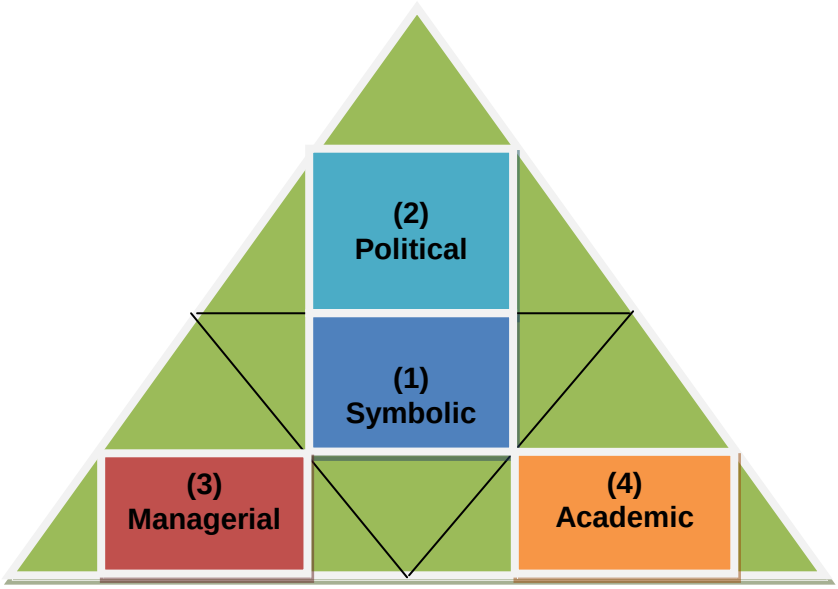


Figure 2.7: Dimensions of leadership for change in education
Source: based on Gregory (1996)

First, leadership embodies symbolically, the whole institution, winning the commitment of others to organizational goals, obtaining resources, and

presenting the corporate image to the external world (Bolman and Deal, 1994). Second, leadership will be political for the institution, gaining support and using and resolving conflicts to achieve its means. Third, leadership performs the standard tasks of controlling, representing, staffing, structuring, setting goals and communicating. Finally, leadership (academic) is about being a leading professional, leading others in a collegiate style, recognizing and encouraging quality, fostering and developing talent, intervening, coaching, being a role-model of exemplary behavior, taking risks and acting as an agent of change (Marsh, 1992; Sergiovanni, 1991). This final dimension of leadership is the one the researcher of the study prefers to propose PDP initiative for the University teachers in Bangladesh.

The researcher believes that Bangladesh requires academic leadership in order to develop the skills and/or talents of all academic staff by encouraging improvements in the quality of teaching, learning and assessment through a collegial approach. At the same time it is important to consider the political and managerial dimensions. Effective managerial skills are crucial at every stage of introducing, implementing and managing a change. As the change agent in Bangladesh he must be prepared to play a political role in establishing political connections with higher management in order to introduce the proposed change. However, leadership itself also needs to be participatory and democratic (Dewey, 1975; Giroux, 1994; Purpel, 1989), particularly, in the context of developing and improving universities and in managing educational change. In fact, universities have special purposes in society, and any definition of educational leadership should also be deeply

concerned with what Duignan and Macpherson (1993, p. 10) have termed 'value based leadership which … should be primarily concerned with the generation of knowledge and the promotion of effective teaching and learning.' At this point, the improvement of educational institutions relies in part on academic and professional staff learning from one another and it needs to develop in an atmosphere which is supportive, creative, directive and qualitative.

In this respect, Chin and Benne (1976) have offered a very useful classification of general strategies to effect planned change. Three quite distinct approaches were identified: power/coercive, empirical/rational and normative/re-educative. Firstly, the approach 'power/coercive' – which strategies are characterized by the application of superior power (i.e. the use or the threat of the use of political, economic or moral sanctions) from those in authority in order to secure the compliance of those in subordinate positions. But this type of strategy runs a great risk, perhaps an inevitable risk of existing conflict and covert resistance to proposed innovations and change. Nevertheless, power/coercive strategies are successfully employed from time to time by both students and governments to implement change in universities. With respect to staff development, Hewton (1979, p.4) has suggested that 'the power/coercive approach…is a part of the job which fascinates some but is reluctantly regarded by others as a necessity which takes time away from what they see as their real work'.

The second approach the 'empirical/rational' approach which stressed the value of research and development producing ideas and proposals for change that can be rationally justified and shown to benefit the potential audience. According to this approach any success appears to depend on the readiness of the audience to accept the suggested change innovations and the strength of the links between them and the researchers. The 'normative/re-educative' strategies emphasize that change cannot be imposed externally but can only be brought about by the persons involved as they themselves recognize, clarify and seek to solve their own problems. Hewton (1979, p. 4) has described this strategy as follows:

> *The normative/re-educative approach involves working with academic staff much more than in the rational/empirical mode. The developer assumes a collaborative, participative stance. An awareness of research and theory may underpin the approach but the starting point is located in the ideas and problems of the client; these are paramount and must be explored.*

The researcher of this study would also prefer this strategy, and agree with Chin and Benne (1976) who argued that normative/re-educative strategies are likely to be the most effective in implementing change. Moreover, he believes, it is recognized that the quality of higher education in Bangladesh is under question and that a pedagogic training program is necessary. At the present time, this is likely to be highly demanding for the personal and professional development of academic staff at universities in Bangladesh. It is essential that institutional support is given to promote this change. The matter of academic staff development is critical in helping to change the culture and the promotion of a 'teaching climate,' (see Eraut, 1975) which is a key issue in university. Davies (1975), Havelock (1973) and Schein (1976) have

described various ways in which a staff developer, (as an agent of change) can play important roles in the higher education institution (university).

Four quite distinct models can be identified in which the change agent can establish a professional relationship with a group of academic staff for their improvement: product-oriented model, prescription-orientated model, process-orientated model and problem-orientated model. According to the first model, academic staffs identify a specific need for information or a particular service and call upon the expertise of the staff developer to satisfy that need. In the second model, academic staffs are unable to identify a specific problem but rather experience a feeling that there are 'something wrong' and the staff developer is brought in both to diagnose the problem and to suggest an appropriate remedy. In the process-orientated model the agent (staff developer) works with academic staff as a 'process consultant' in the diagnosis and solution of problems.

The particular contribution of the change agent is to facilitate the problem-solving process and, in doing so, to provide training in problem-solving skills for those with whom he is working. This strategy clearly lies in the normative/re-educative tradition where the emphasis is placed on developing the personal and professional qualities of individuals. Finally, in the problem-oriented model, the agent and academic staff work together in a joint enterprise to diagnose and solve problems. The change agent may have in mind a well-defined model (that is PDP training program) of the problem-solving process. He should also be conscious of the need to manage his

personal relationships with those with whom he is working as the project develops and the institutional context into which any proposed solution must fit. The agent should be particularly concerned to ensure that a wide range of possible alternative solutions are explored. This strategy also lies within the normative/re-educative tradition where the emphasis is primarily on a mutual process of problem-solving.

The researcher of this study, prefer the 'process-orientated and problem-orientated model' in the context at Universities because it is the most effective strategy for a change agent or staff developer. However, obviously any single strategy that an agent adopts to facilitate change in such a complex and diverse area as university teaching will prove inadequate. So it is important to recognize, nurture and seek to understand the often unique ways in which universities have responded to the many challenges of developing teaching, learning and assessment methods and the competencies of their academic staff. The theoretical perspectives outlined in this chapter have helped the researcher towards that understanding.

2.6 Conceptual Framework of the Study

Based on the review of literature, the researcher has considered the Technological Pedagogical Content Knowledge (TPACK) as conceptual framework for this study. Technological Pedagogical Content Knowledge (TPACK) is a framework that identifies the knowledge teachers need to teach effectively with technology. The TPACK (see *Mishra & Koehler, 2006)* framework extends *Shulman's idea of Pedagogical Content Knowledge has*

shown in Figure 2.8. It may have some limitations for more focus on cognitive domain (Knowledge) but it also refers psychomotor domain (Skill) as well.

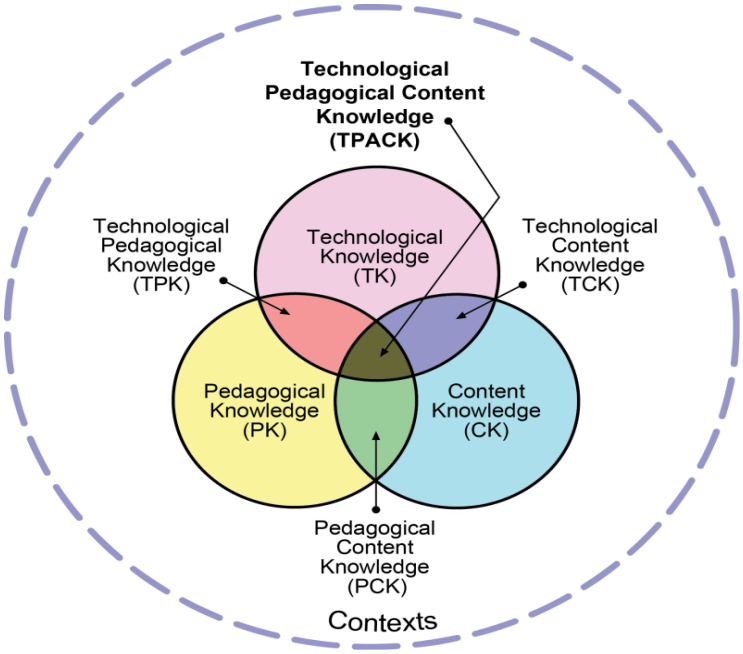


Figure 2.8: TPACK image (rights free)

At the heart of the TPACK, is the complex interplay of three primary forms of knowledge as Content (CK), Pedagogy (PK), and Technology (TK). The TPACK approach goes beyond seeing these three knowledge bases in isolation. TPACK also emphasizes the new kinds of knowledge that lie at the intersections between them, representing four more knowledge bases teachers applicable to teaching with technology with Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and the intersection of all three circles as Technological Pedagogical Content Knowledge (TPACK). Effective technology integration for pedagogy around specific subject matter requires developing sensitivity to the dynamic, transactional relationship between

these components of knowledge situated in unique contexts. Individual teachers, grade-level, university-specific factors, demographics, culture, and other factors ensure that every situation is unique, and no single combination of content, technology, and pedagogy will apply for every teacher, every course, or every view of teaching. The each intersection of the framework defines as follows:

- **Content Knowledge (CK)**: Koehler & Mishra, (2009) have identified CK as the teachers' knowledge about the subject matter to be learned or taught. As Shulman (1987) noted, this knowledge would include knowledge of concepts, theories, ideas, organizational frameworks, knowledge of evidence and proof, as well as established practices and approaches toward developing such knowledge.

- ***Pedagogical Knowledge (PK)****:* The PK refers to teachers' deep knowledge about the processes and practices or methods of teaching and learning. They encompass, among other things, overall educational purposes, values, and aims. This generic form of knowledge applies to understanding how students learn, general classroom management skills, lesson planning, and student assessment and more than that of Koehler & Mishra (2009).

- ***Technology Knowledge (TK)****:* Koehler & Mishra (2009) have outlined the TK as the knowledge about certain ways of thinking about, and working with technology can apply to all technology tools and resources. This includes understanding information technology broadly enough to apply it productively at work and in everyday life, being able to recognize when information technology can assist or impede the achievement of a goal, and being able continually adapt to changes in information technology.

- ***Pedagogical Content Knowledge (PCK)****:* Koehler & Mishra (2009) have defined the PCK as consistent with and similar to Shulman's idea of knowledge of pedagogy that is applicable to the teaching of specific content. Central to Shulman's conceptualization of PCK is the notion of the transformation of the subject matter for teaching. Specifically, according to Shulman (1987), this transformation occurs as the teacher interprets the subject matter, finds multiple ways to represent it, and adapts and tailors the instructional materials to alternative conceptions and students' prior knowledge. PCK covers the core business of teaching, learning, curriculum, assessment and reporting, such as the conditions that promote learning and the links among curriculum, assessment, and pedagogy.

- ***Technological Content Knowledge (TCK)****:* Koehler & Mishra (2009) have identified the TCK by an understanding of the manner in which technology and content influence and constrain one another. Teachers need to master more than the subject matter they teach; they must also have a deep understanding of the manner in which the subject matter (or the kinds of representations that can be constructed) can be changed by the application of particular technologies. Teachers need to understand which specific technologies are best suited for addressing subject-matter learning in their domains and how the content dictates or perhaps even changes the technology—or vice versa.

- ***Technological Pedagogical Knowledge (TPK)****:* TPK is an understanding of how teaching and learning can change when particular technologies are used in particular ways. This includes knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinarily and developmentally appropriate pedagogical designs and strategies (Koehler & Mishra, 2009).

- ***Technological Pedagogical Content Knowledge (TPACK)****:* TPACK is underlying truly meaningful and deeply skilled teaching with technology; it is different from knowledge of all three concepts

individually. Instead, TPACK is the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones (Koehler & Mishra, 2009).

CHAPTER 3

METHODOLOGY OF THE STUDY

3.1 Prologue

This chapter provides an outline of the design of the research that is used in this study. Further consideration has been given to the main aspects of the research and to the study incorporating cross-references of personal data with the general data within the sample universities and an explanation for structuring the research in this way. Thus, in this chapter, the research design, including the methodology used to describe and capture data, is discussed. The researcher also discusses the theoretical assumptions that underpin the research process and then provides guidelines of how to conduct the research e.g. the methods, techniques and tools adopted when conducting the research. This plan also includes population, sample, data collection instruments, data collection procedures and data analysis methods. The chapter has further identified and discussed possible limitations in the chosen research methodologies with some improvements that could be made. The last part of the chapter relays ethical considerations and period of this research study.

3.2 Theoretical Assumptions: a Research Paradigm

Personal philosophical assumptions influence a researcher's stance towards the nature of reality; how the researcher knows what she or he knows, and the role of values in the research, the language of research and the methods used in the process (Creswell, 2010). The researcher developed perceptions of the nature of existing professional development, pedagogy practices in

universities, and integrating technology through one and half decades experiences in the classroom, interacting with many teachers involved in teaching different subjects in social science faculty, and observing the difficulties students faced in studying diverse subjects. Secondly, the researchers knowledge of this discipline, and how the researcher struggle to learn them informed and directed what the researcher chose to investigate, the research design and data collection instruments. The participants were the researcher's students and colleagues. This allowed for effective collaboration and interaction with the participants, thus minimizing the 'distance' or 'objective separateness' (Guba & Lincoln, 2005). This also, contributed positively to the distribution of the questionnaire, its collection, follow-up interviews, observe classroom practices and arrange FGDs as sources of data.

To the realist, the social world is made up of relatively unchallengeable structures that exist independently of our individual descriptions (Guba & Lincoln, 1994). Reality is subjective and multiple, as seen by the participants in the study. With this belief, the researcher produced quantitative data based on participants own views, used multiple quotes in the participants' own words, how they viewed their respective experiences, provided evidence of their different perspectives and identified themes that emerged. To achieve this, the researcher established a good level of rapport and empathy, which is critical to gaining depth of information, since the participants have a strong personal input of the issue studied.

In the qualitative process, it is important to acknowledge that research is value-laden, and that those values mediate and shape what is understood. This formed an integral component that shaped the narrative and the interpretation, in conjunction with the presentations by the participants. Also, the qualitative procedure, or approach, is characterized as inductive, emerging, and shaped by the researcher's experience in collecting and analyzing data (Creswell, 2010). Based on the above consideration an outline of research paradigm is discussed below:

A paradigm, or "worldview", is a basic set of beliefs that guide action (Guba & Lincoln, 2005), and in both quantitative and qualitative research, vary depending on the type of belief the researcher brings to the research. Furthermore, it provides a conceptual framework for seeing and making sense of the topic. It also has to identify the researcher's role in the study and steered the course of the research. A brief discussion of five worldviews that shape quantitative and qualitative research could be helpful to choose the particular paradigm for this study.

In figure 3.1 below, the researcher presents a conceptual frame of various research paradigms.

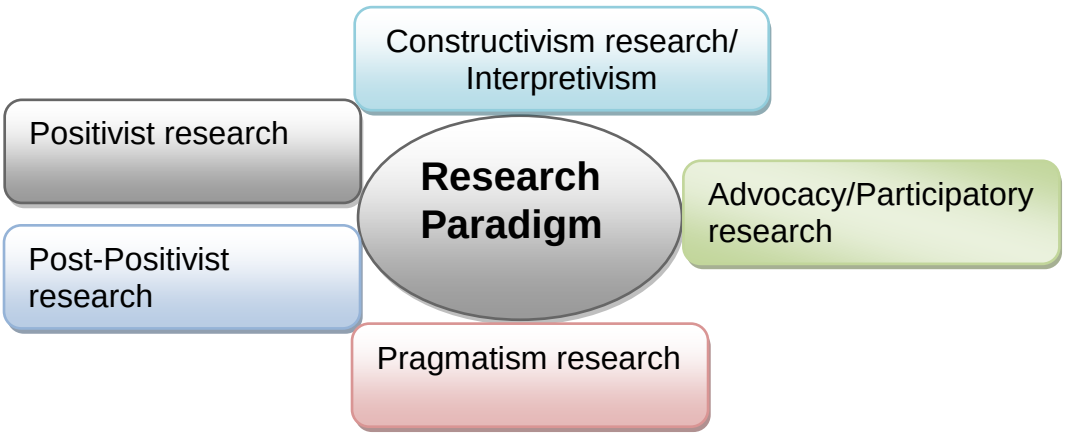


Figure 3.1: Research paradigms

3.2.1 Positivism

The positivist paradigm argues that all factual knowledge is based on the 'positive' information gained from observable experience, and that any ideas beyond this territory of demonstrable fact are metaphysics. Positivism seeks empirical regularities, which are a correlation between two variables (dependent and independent) which do not need to be causal in nature, but it does allow laws to be defined and predictions made (Cohen, Manion & Morrison, 2000).

Positivists also believe that reality is stable and can be observed and described from an objective viewpoint (Yin, 2003) and that phenomenon should be isolated and observations should be repeatable. This often involves the manipulation of reality (knowledge construction) with variations in independent variables (professional development, pedagogy and technology) in order to identify regularities in, and to form relationships between, some of the constituent elements of the social world (university practices through teaching and learning). Yin (2003) argued that predictions can be made on the basis of the previously observed and explained realities and their interrelationships and also, analytical data and statements are permissible as true through reason alone.

3.2.2 Post Positivism

Positivism contains two main themes, namely controlling the research conditions such as human behavior and investigating those through scientific methods (Douglas cited in Cohen, Manion & Morrison, 2000). The aim of inquiry is explanation, ultimately enabling the prediction and control of phenomena, whether physical or human (Guba & Lincoln, 2008), and because of these controls, they tend to generalize findings with truth. As it is very structured and clear, it is easy to be objective. Post positivists work from the assumption that any piece of research is influenced by a number of well-developed theories apart from, and as well as, the variables which is being tested, as such hypotheses have to be tested by empirical approaches.

However, this study being both quantitative and qualitative in nature with no controlling factors does not fall under this paradigm.

3.2.3 Advocacy/Participatory

The key principle of this paradigm is that research should be action directed and geared towards reform that may benefit, improve or change the lives of the participants, the institution and the environment in which they live and work, or even the researchers' lives (Creswell, 2009). As the issues are studied and exposed, the researcher provides a voice for the participants, raising their consciousness and improving their lives.

In this study, this means advocacy plays a role but not a central one. The study set out to bring awareness, and possibly a change in practice.

3.2.4 Pragmatism

Pragmatist researchers' main focus is on the outcomes of the research, which include the actions, situations, and consequences of the inquiry rather than antecedent conditions and methods. The main interest is the problem being studied, and the questions asked about this problem (Creswell, 2010). To a pragmatist, the mandate of science is not to find truth or reality, but to facilitate human problem-solving. In practice, the researchers using this worldview subscribe to multiple methods of data collection to best answer the research question (Creswell, 2009) and will employ both quantitative and qualitative sources of data collection, with the focus on the practical implications of the research addressing the 'what' and 'how'. For this research quantitative and qualitative approach are being used, so pragmatism may be applicable.

3.2.5 Social Constructivism

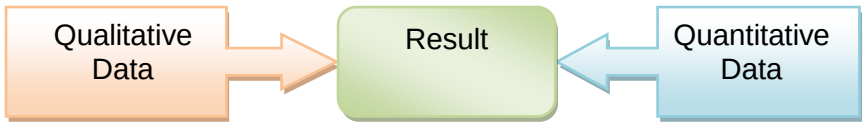
Constructivists argue that human beings construct their own social realities in relation to one another. Reality is subjective and experiential and knowledge is not absolute, and the researcher is no longer outside the system, but part of it. The goal of constructivist research is for understanding and structuring, suggesting that 'reality is socially constructed' (Mertens, 2005, p.9). Constructivists do not generally begin with a theory (as with post positivists); rather they 'generate or inductively develop a theory or pattern of meanings' (Creswell, 2010, p.9) throughout the research process. The present study

may fall under this purview and as a constructivist researcher, it was important to address the 'process' of interaction among the participants.

Studying individuals with their many characteristics, different behaviors, perceptions, opinions, and attitudes (Cohen, et al., 2000) helps in acquiring knowledge of the issue, and placed this study within the interpretivist framework. The interpretivist paradigm provides opportunities to seek understanding and make sense of the participants' perspectives which are shaped by social constructions (Taylor, 2008). Through this paradigm, relying on the 'participants' views, the researcher obtained a better understanding of meanings, reasons, and insights into the actions of the participants regarding the issue investigated. Thus, a mixed method was found suitable for this study.

According to Creswell (2010), mixed methods research is the mixture of qualitative and quantitative approaches in the research process, with a focus on collecting, analyzing, and mixing of qualitative and quantitative data. It is not enough to simply collect and analyze qualitative and quantitative data; they need to be "mixed" in some way so that they present a comprehensive picture of the issue. It presents three ways of 'mixing' qualitative and quantitative data, as shown below Figure 3.2:

Merge the data: *Collaboration of data from the two approaches to draw a conclusion*



Connect the data*:* In this perspective qualitative data is incorporated into quantitative data to produce a conclusion.

Embed the data: In this way, approaches are used alongside each other to obtain an outcome.

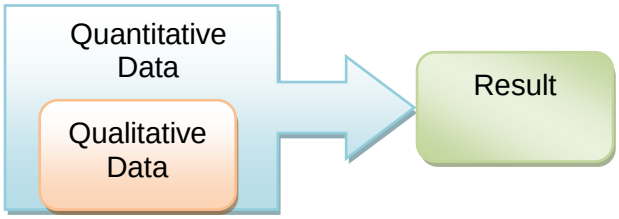


Figure 3.2: Ways of mixing qualitative and quantitative data

3.3 Research Design

A research design, in the opinion of the researcher, is the conceptual structure within which research could be conducted. It deals with a logical problem through a logical plan for getting from the initial set of questions to be answered to the set of conclusions about these questions. The propositions

direct attention to something that should be examined within the scope of study, and determine the direction of the research and research alternatives.

The intention of this research was to study the responses of a group of teachers, students and higher authorities within universities to the professional development program, pedagogic practices and technology integration for university teachers in Bangladesh. The aim is to explore the current status of professional development (PD) scopes, to analyze the PD needs, to explore pedagogical practices, to ascertain the technological skills and requirements of teachers at universities and finally to propose a PDP program model based on findings. Specific emphasis has been given to the views of the target groups on the issues. In this connection, this research is an initiative to explore the existing situation for a change through the development of a PDP program model.

Therefore, the study integrated both qualitative and quantitative approaches to explore the research questions based specific objectives of the study. The study has also incorporated primary and secondary data sources regarding all expected outcomes. However, special emphasize has been given to the participatory approaches in all aspects of the study. Moreover, triangulation approach has been employed to ensure the validity of data. This has been done through the following phases:

- Phase I: Documents analysis
- Phase II: Opinion survey
- Phase III: Development of PDP program model

- ***Phase I: Documents analysis***

Relevant research studies, articles, books, journals and worldwide websites have been used as secondary sources and then carefully analyzed for reviewing the literature in chapter 2. These have been assisted in achieving the specific objectives, developing the data collecting tools and selecting the sample of the study. The secondary sources have also helped to gather in-depth understanding and to support the findings of this study.

- ***Phase II: Opinion survey***

The primary data has been collected from field level through participatory field survey. Opinion of the stakeholders, participants and beneficiaries has been explored using different techniques e.g. questionnaire survey, classroom observation, interviews and focus group discussions (FGDs). Thus, triangulation approach has been employed to ensure the validity of data in the study. The answer of the research questions has been achieved by exploring aspects of a needs analysis of a group of respondents and by surveying the views of different categories of respondents about the existing PD program, pedagogical practices and technology integration in the pedagogy of university in Bangladesh.

- ***Phase III: Development of PDP program model***

In the last phase of the study, it has offered a PDP program model based on the findings of collected data through primary and secondary sources. Questionnaire, Interview, Classroom observation and Focus Group

Discussion (FGD) techniques has been used as tools of primary data collection.

3.4 The Population

The study indicates that the area and scope of this research are limited to both public (37) and private (85) Universities of Bangladesh. But the target population is limited to Faculty of Social Science and/or the Institute having Social Science or Education discipline. Therefore, all teachers and students who are involved in the universities form the population of the study.

3.5 The Sample

Purposive and stratified sampling techniques have been then followed at the next stage of sample selection. Different sampling strategies have been employed for selecting of different sample size for this study as the representative of population. At this point, the researcher has carried out the advice of Cohen *et al.* (2003) who argued that the quality of a piece of research not only stands or falls by the appropriateness of methodology and instrumentation but also by the suitability of the sampling strategy (see also Morrison, 1993, p. 112-17). They also argued that there is no clear-cut answer for the correct sample size but a sample size of thirty is held by many to be the minimum number of cases if researchers plan to use some statistical analysis on the data. However, it is important to note in this study that the sample size must reflect appropriately the population being targeted. Thus, the sample of this study targeted as follows in the Table 2 in the next page:

Table 2: Sample size at a glance

Name of University	Teacher	Dean & Director	Student	Higher Authority		
				Uni.	*UGC*	*MoE*
University of Dhaka	13x4=52	1+1+1=3	120	1	3	3
Jahangirnagar University	6x4=24	1	60	1		
Rajshahi University	10x4=40	2+1=3	60	1		
Khulna University	3x4=(12-1)=11	1	60	1		
Chittagong University	8x4=32	1+1=2	60	1		
Sub-Total	**159**	**10**	**360**	**5**	**3**	**3**
Grand Total	**540**					

3.5.1 University Sample

Only public university has been purposively selected as the sample. The basis of selecting public university has considered the similarities of funding, facilities, faculties, infrastructure and homogenous in nature. Furthermore, the University where has teaching subject under the Faculty of Social science and/or the Institute where has teaching subject in Social Sciences have been considered as sample university for the basis of purpose. About fifteen (15%) percent of the public universities was selected having a total of 5 public universities as the sample universities for this study. These sample universities covered 4 administrative divisions namely Dhaka, Khulna, Rajshahi, and Chittagong. There are more public universities in Dhaka division than that of other divisions, two universities were taken from here. The university where there is no teaching subject under Faculty of Social science and/or in the Institute has not been covered as sample. In this study,

the departments under Faculty of Social Science and/or the Institute where there is Social Science discipline have been selected purposively. This is because, the nature of teaching of these disciplines are more or less similar with education. Other faculties, requires a bit different professional and pedagogical skills. All the departments (100%) under above mentioned faculty and Institute are the sample for this study. The sample universities, department and Institute are as follows in Table 3:

Table 3: The Sample universities, departments and institutes

SL	Name of University	No. of Departments	No. of Institutes	Total
1	University of Dhaka	11	2	13
2	Jahangirnagar University	6	0	6
3	Rajshahi University	9	1	10
4	Khulna University	3	0	3
5	Chittagong University	7	1	8
Total		**36**	**4**	**40**

3.5.2 Teacher Sample

Four teachers from each department under the faculty & Institute have been selected purposively based on availability as sample. Stratified sampling strategy has been employed for teacher sampling. There have been two strata for teacher sampling:

- Strata-1: Two of the teachers have been selected who has 0-5 years teaching experience and
- Strata-2: Two of the teachers who has more than 10 years teaching experience in the department.

Thus, both new in teaching and long experienced teachers' have been covered in the study. Simultaneously, gender issues have been considered for teacher selection. Four teachers has been covered from four designated post e.g. Professor, Associate professor, Assistant Professor and Lecturer. However, the ratio of sampled teacher selection (experience and gender) has been varied based on the unavailability of strata and gender wise teacher, their disinterest and lack of available time even though taking prior appointment in the respective departments of respective universities. Therefore, the final sampled teacher situation has been shown in the following Figure 3.3, Figure 3.4:

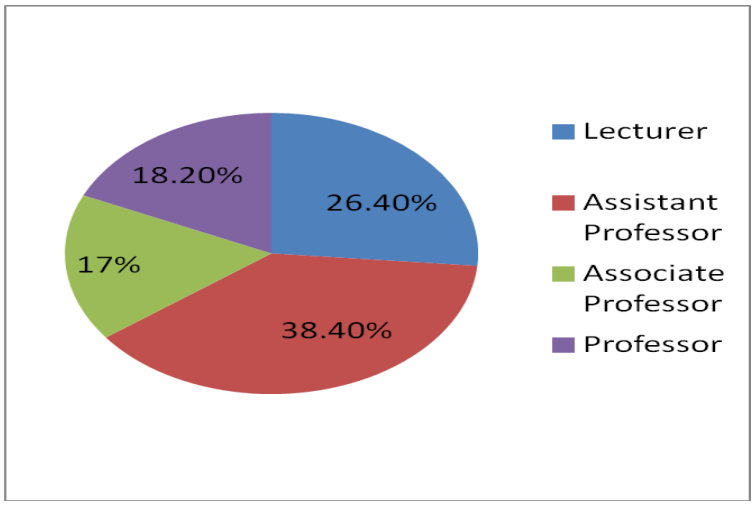


Figure 3.3: Sample teacher: designation wise

The Figure 3.3 has demonstrated the ratio of different category of sample teacher as designated Lecturer, Assistant Professor, Associate Professor and Professor. More than one third (38.40%) of the teacher respondent has Assistant Professor and more than one fourth (26.40%) of the teacher respondent has Lecturer. These two categories of teacher respondent have

higher than Associate Professor (17%) and Professor (18.20%) respondent. It might because of engagement and interest to provide data for the study. The following Figure 3.4 has shown the representation of male (77.99%) and female (22.01%) teacher respondent. The portion of male teacher is higher than female teacher, it might be because of number of male teacher are working more than female in the universities in Bangladesh. Rather, the female teachers are also busy with family life more that male so they have less interest to provide data in the study.

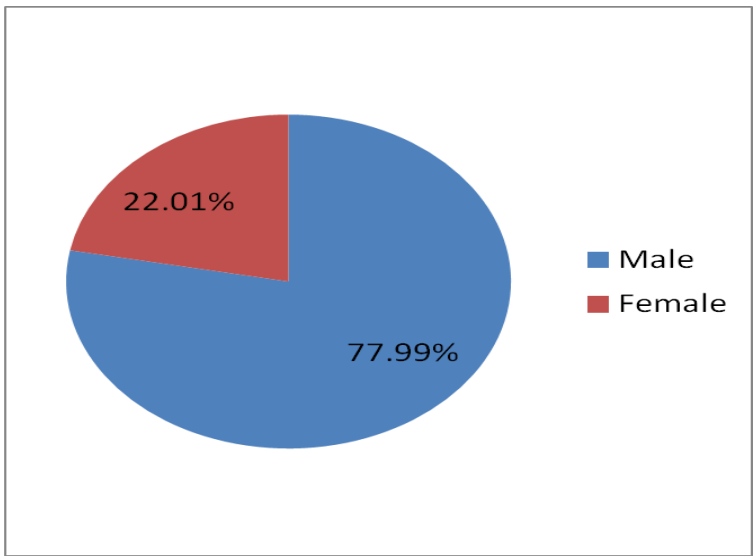


Figure 3.4: Sample teacher: gender variation

3.5.3 Student Sample

Ten students of the observed classroom have been selected as sample. Those ten students have been taken on availability and on their interest. The gender issues have been considered for selecting students. Thus, a total of 36 X10= 360 different students have been selected as sample.

3.5.4 Classroom Observation

Two classrooms teaching learning activity from each University has been observed *(4 classrooms from DU as some more departments and institutes)*. One classroom of same teacher has been observed 3 times for validity of data. All together 36 classrooms have been observed in this study. Regarding the classroom observation, the prior permission of respective teacher has been ensured. The following Figure 3.5 has demonstrated the classroom sampling for the study.

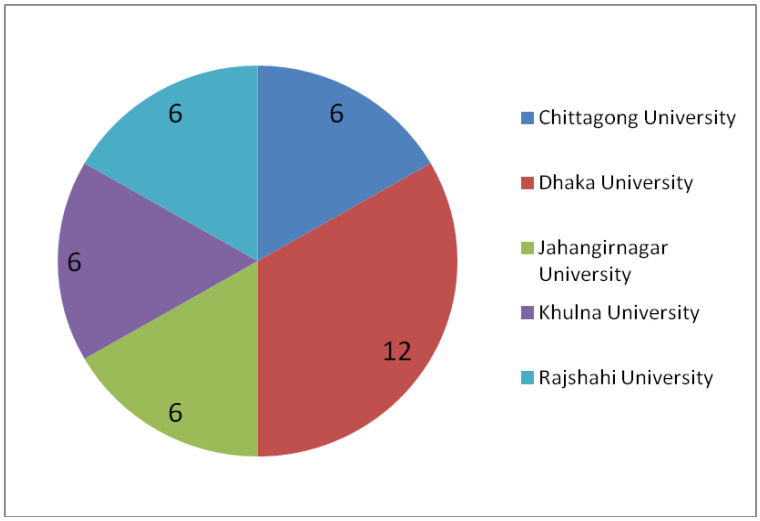


Figure 3.5: University wise classroom sampling

Finally, a total of 5 persons among higher authorities e. g. VC/Pro VC/Treasurer from respective Universities, 3 UGC officials and 3 officials from Ministry of Education have been taken as the sample. The prior appointment has been made with the higher authority because of their tight schedule.

3.5.5 Respondent Categories

The primary data were collected from the following categories of respondents:

- Teachers
- Students
- Dean of Faculty and Director of the Institute
- Higher authority (VC/Pro-VC, Treasurer) of the University
- UGC Personnel
- Ministry of Education Officials

3.6 Data Collection Techniques

Data has been collected through primary and secondary sources. Questionnaire, Interview (semi-structure), Focus Group Discussion (FGD) and observation techniques have been used for primary data collection. Relevant documents, books, journals and world wide websites have been used as secondary sources for collecting data. Thus triangulation was applied in this study. Triangulation is the application and combination of several research methodologies in the study of the same phenomenon. Triangulation was applied in this study because:

- It is the preferred line in educational research;
- It can be employed in both qualitative and quantitative (validation) studies;
- It is a method-appropriate strategy of founding the credibility of qualitative analyses;
- It becomes an alternative to ‘ traditional criteria like reliability and validity’

By applying triangulation the researcher hopes to overcome the weakness or intrinsic biases and the problems that come from single method, single-theory studies. A variety of research data collection tools have been used including Questionnaire, Interview (semi-structure), Classroom observation, and Focus Group Discussion (FGD). The fact that the particular phenomena are studied using several different methods, does allow different aspects of the issues to be assessed and hence improve the reliability of the analysis. Using both qualitative and quantitative research is better that one or the other exclusively. Cross-referencing among the Questionnaire, Classroom observation, FGD and Interview have conducted to justify key aspects of the research. From both the qualitative and quantitative perspectives, confirmation through the use of triangulation of these results confirmed, to some degree, that the data has validity.

3.7 Data Collection Tools

There have different categories of data collection tools been developed for collecting primary data. The used tools and major respondents of the study has mentioned in the following Table 4:

Table 4: Used tools and respondents

Tools	Respondents
Questionnaire	Teachers
Interview Guide	Dean and Director, Higher Authorities e.g. VC/Pro-VC/Treasurer, UGC and MoE Officials
FGD Guide	Students
Classroom Observation Checklist	Teaching Learning activities

3.7.1 Questionnaire

Firstly, a questionnaire has been used to gather primary data from the sample of 159 teachers at different five Universities. Questionnaires are widely used and are a useful instrument for collecting data, being able to be administered without the presence of the researcher, and often being comparatively straightforward to analyze (Wilson and McLean, 1994). Munn and Drever (1999) focused on this kind of questionnaire because this is the kind which teachers are most likely to use in their study. They also argued that a questionnaire is a popular way of gathering information, it is easy to understand and it offers an efficient use of time, anonymity (for the respondents) and the possibility of a high return rate for the teacher-researcher. Bell (2005) also advised that a well designed questionnaire could produce the information which is needed and is acceptable for research. She indicates that questionnaires are relatively easy to administer, analyze, interpret and can provide feedback on attitudes. As it is easy to answer, respondents have the opportunity to voice their concerns without too much effort. She emphasizes the importance of careful wording of questions in order to maintain validity and to ensure that they measure what they are designed to measure. Another factor was that internal mailing facilities could be used within Bangladesh to access respondents thus assisting in the logistics of circulating a comparatively large number of questionnaires. The questionnaire has structured, with a number of closed questions with some opportunities for further comment, which has useful to generate responses and analysis. The questions listed in the questionnaire, (Appendix A), has

designed to collect background information on the respondents (Section A) and their perceptions about a range of pedagogic practices & concepts from large group teaching to teaching strategies, resources, technology skills, technology integration in teaching and their views in respect to the proposed PDP program (Section B). More specifically, the questions provided opportunities for respondents to consider the relative importance of aspects of different teaching strategies using a Likert Scale in order to identify respondents' opinions and views. Questions relating to scopes and pedagogic practices with technology materials have also included. It was felt that these elements would help in attempting to explore the existing PDP situation and needs of the respondents. The questionnaire has distributed among the teachers personally to higher education teaching at universities for their responses with a covering letter.

3.7.2 Interview

The second technique which has been used to gather primary data in this study is interviews schedule semi-structured in nature (Appendix:B). The interview sessions has set up with eleven of the higher management personnel of the universities (VC/Pro-VC/Deans/Chairman) and the higher officials (UGC, MoE) of University education management authority. One of the Vice Chancellors missed his appointment with the researcher because of an unavoidable sudden meeting with higher authority. In an attempt to cover a variety of topics, nine main questions has been asked in the interviews in order to keep the interview as short as possible, due to the busy time schedule of the higher management. These nine questions has prepared from

twenty two questions. The researcher has taken notes and has recorded the entire interview sessions (if the interviewer permitted) for using in this study. This allowed the interviewer to seek out more specific information, as well as keeping the interview within the predetermined guidelines. The key areas have to explore the based on the issues raised in the questionnaire. As this format has adaptable and allowed issues to be followed up and responses probed in greater detail, it also permitted unanticipated issues to be developed and clarified (Bell, 2005). Edwards and Scullion (1982) suggest that one of the problems of an unstructured approach during an interview is that it may tap only vague and general attitudes to a particular issue. Having some basic structure to the interviews partly avoided this problem and allowed the interviews to focus in on key points. These interviews have purposeful and context-based as Fletcher (1988, p.9) defines an interview as 'a purposeful conversation' and Breakwell (1990, p.1) suggests that 'interviewing is used in many contexts-anywhere, in fact, where people wish to get and give information in an orderly fashion'. Though interviewing is a time consuming method of research, it offers a productive source of information and a 100% response rate. As the interviewer is in direct contact with the interviewee, the interviewer can focus on what is important to the interviewee and hear it has expressed in their language. Further advantages of the interview are sampling advantages including greater control over respondent selection, and hence, more depth, context and flexibility in the process of inquiry (Cassell and Symon, 2004).

However, there are some disadvantages of this method of research. It relates to interviewer bias (Bell, 2005), it is time consuming for both parties, and this needs to be negotiated before the interview takes place. The interview process is a social interaction; perhaps the respondents might give answers they think in the interviewer wants to hear, rather than saying what they truly believe. The 'Hawthorn' effect may result in the interviewee giving what they consider to be the 'right' answer. Interviews might be structured to ensure that the appropriate focus is maintained, but yet flexible enough to allow for supplementary questions to be added, which also happened in this study.

3.7.3 Focus Group Discussion (FGD)

The third technique which has used to gather primary data in this study is focus group discussion (FGD) with the sampled number of 360 students to participate in a follow-up group discussion. The FGD guide (Appendix: C) has two sections (Section: A and Section: B) in which Section: A covers the basic information of the participants and Section: B explores the main issues. In an attempt to cover a variety of study variables, seven main issues has been raised in the groups in order to keep the participants as short as possible, due to the busy time schedule of the students. These seven questions has prepared from eighteen issues. The researcher has taken notes and has recorded the entire FGD sessions (if the group permitted) for using in this study. This allowed the group to explore more specific information, as well as keeping the group within the predetermined guidelines. The key areas have to explore the based on the issues raised in the questionnaire and interview. A focus group can be defined as ' . . .a group of individuals selected and

assembled by researchers to discuss and comment upon, from personal experience, the topic that is the subject of the research' (Gibbs, 1997, p. 1). It has initially expected that some (n=10) of the total respondents would be available to arrange a time for the FGD in each group after classroom teaching observation. However, FGD is a form of group interview, though not in the sense of a backwards and forwards between interviewer and group. Rather, the reliance is on the interaction within the group who discuss a topic supplied by the researcher. The use of FGD is growing in educational research as an adjunct to group interviews (Morgan, 1998). Hence the participants interact with each other rather than with the interviewer, such that the views of the participants can emerge. It is very focused on a particular issue, economical on time and an approach to produce a large amount of data in a short period of time. At the same time, a FGD (Morgan, 1988; Krueger, 1988) is useful for generating and evaluating data from different sub-groups of a population. It would appear that the deeper benefits of focus groups derive from two features: group interaction (Burns, 1989; Albrecht et al., 1993) and the replication of social forces (Robson, 1990; Krueger and Casey, 2000). The use of FGD is an increasingly popular tool in education research (HEA, 2006). Finally, researcher chose 360 students out of the total large number of students purposively. The gender issues for selecting students have considered in the study. Researcher has made request to 10 students as the group from each observed classroom. In all sessions 100% (10 persons) have presented and researcher recorded the conversation and took some important notes from the discussions.

3.7.4 Classroom Observation (CO)

Observation method is concerned with neither what a respondent places on paper nor with what s/he says in interview, but deals with the overt behavior of persons in appropriate situations, sometimes under conditions of normal living and other times within specially set of determinant factors conditioning the environment (Good, 1963). Robson (2002) posits, the actions of people may depart from what they say they do. Through observation, "the use of immediate awareness, or direct cognition, as a principal mode of research has the potential to yield more valid or authentic data than would otherwise be the case with mediated or inferential methods" (Cohen, et al., 2007, p 396). An observation checklist has been used to observe 36 classrooms to explore the present pedagogical practices with technology in teaching-learning process at the universities in Bangladesh. There is also a room for observation to find the activities of teachers towards classroom practices, technology and other resources integration in teaching, infrastructure and facilities available in classrooms for quality teaching. Thus, there have been four sections (Section: A, Section: B, Section: C and Section: D) in the Classroom Observation Schedule (Appendix: D). The Section: A has covered the basic information, Section: B has explored the pedagogical practices, Section: C has denoted teaching strategies and resources and in Section: D identified the existing ICT materials available in classrooms in the universities in Bangladesh. Data collected by this tool has been used to gain some quantitative information with some qualitative options. Multiple Scales has been used for observing and collecting data.

3.7.5 Try-out of the Instruments

The term try-out is used in two different ways in social science research. It can refer to so-called feasibility studies which are "small scale version, or trial run, done in preparation for the major study" (Polit et al., 2001, p. 467). However, it can also be the pre-testing or 'trying out' or *pilot study* of a particular research instrument (Baker 1994, p.182-3). One of the advantages of conducting a try-out is that it might give advance warning about whether proposed methods or instruments are inappropriate or too complicated. The tools of this study have been tried out prior finalizing at field level by the researcher. Tools have been experimentally piloted to the respondents who are not included as sample for final data collection. The tools have been criticized immediately after field test to find out the appropriateness of used language, approaches of enquiry, ethical issues, and the relevancy with the study.

Therefore, the questionnaire has been developed and piloted (Appendix A) by ten respondents in the University which has not been included as sample for collecting the evidence for the study. Some minor, (yet important), changes have made to the pilot version of the questionnaire. For instances, in question number 6 (Section: A), the M.S.S & M.Phil degree have included because a large number of the respondents had obtained degrees in social sciences. The question in Section: B numbers 8 and 9 have arranged together (a & b) and 11 have re-arranged with number of learners more than 50 as large groups. The statement in 17 (a) was wrong in verb as ‘can’ so it has been changed as ‘A teacher should be friendly with the students in classroom

teaching' in the final version. The question 25 had 'Yes/No' type, it has been edited as 25 (extension) If 'Yes', How can we do it (your suggestion please, if any). The refined final version (Appendix B) has circulated to the teachers of the Universities. The researcher has also piloted the semi-structured interview schedule (Appendix: B) with one of the deans on the day before the scheduled interviews. An FGD guide has been developed and piloted with two groups of students for using in the study. Finally, the primary draft of classroom observation (CO) had been edited. Then the second draft had been finalized and piloted in the field level on a university and on the basis of feedback of piloting the researcher finalized the tool in field (Appendix: D).

3.7.6 Validity and Reliability of Instruments

The principles underlying this research have based on the fact that validity is a matter of trustworthiness, utility and dependability that the researcher and the different stakeholders place into it. In this study, validity has a concerned with whether the research is believable and true and whether it is evaluating what it is supposed or maintained to evaluate. In this regard, Burns (1999, p.160) stresses that 'validity is an essential criterion for evaluating the quality and acceptability of research.' However, the researcher has used different instruments to collect data. Therefore, the quality of these instruments has very critical because 'the conclusions researchers draw are based on the information they obtain using these instruments' (Fraenkel & Wallen, 2003, p.158). Thus, it is imperative that the data and the instruments have been validated.

Another main requirement of any research process is the reliability of the data and findings. Mainly, reliability deals with the consistency, dependability and replicability of 'the results obtained from a piece of research' (Nunan, 1999, p.14). Obtaining the similar results in quantitative research is rather straightforward because the data are in numerical form. However, in qualitative approaches to research achieving the identical results are fairly demanding and difficult. It is because the data are in narrative form and subjective. To this end, Lincoln and Guba (1985, p.288) point out that instead of obtaining the same results, it is better to think about the dependability and consistency of the data. In this case, the purpose is not to attain the same results rather to agree that based on the data collection processes the findings and results are consistent and dependable. Merriam (1998, p.206) believes that 'the human instrument can become more reliable through training and practice.' In general, Lincoln and Guba (1985) and Merriam (1998) suggest that the dependability of the results can be ensured through the use of three techniques: the investigator's position, triangulation and audit trial. On the whole, the following miscellaneous procedures have been used to validate and reliable the instruments and the data in this study.

The research instruments and the data have been reviewed by the experts in the field of research. Based on the reviewer's comments the unclear and obscure questions have been revised and the complex items reworded. Also, the ineffective and nonfunctioning questions have been discarded altogether. Mainly, the researcher has been concerned with the congruence of the research findings with the reality. Also, he dealt with the degree to which the

researcher observes and measures what was supposed to be measured. On the whole, to boost the internal validity of the research data and instruments, the researcher has been applied the following six methods recommended by Merriam (1998): triangulation, member checks, long-term observation at research site, peer examination, participatory or collaborative modes of research and researcher's bias. Furthermore, in order to increase the reliability of this research, the researcher has explained explicitly the different processes and phases of the inquiry. Therefore, the researcher has elaborated on every aspect of the study. He has described in detail the rationale of the study, design of the study and the subjects.

In order to strengthen the validity and reliability of study data and findings, the researcher has collected data through several sources: questionnaires, interviews, FGD and classroom observations. Gathering data through one technique can be questionable, biased and weak. However, collecting information from a variety of sources and with a variety of techniques have been confirmed the findings. Certainly, through triangulation this study has been gained qualitative and quantitative data in order to corroborate the findings. It is clear that the researcher has his own particular experiences, values, beliefs and worldviews. Thus, the researcher has tried to collect, analyze and interpret data as impartially as possible. Therefore, the researcher has tried to remain as nonjudgmental and clear as possible throughout the research process. He has attempted to stick to the ethical rules and principles, performed the study as accurately as possible and report the findings honestly.

3.8 Data Analysis Process

The quantitative data has been analyzed using descriptive statistics. SPSS version IBM 20 has been used for analyzing quantitative data. There are 21 interviewers (University Authority: 15, University Grants Commission: 3 and Ministry of Education: 3) and 360 students are the sample in this study. The study has considered the following Table 5: `Alpha Numeric Code' to analysis their qualitative data. The qualitative data has been shown in the study with these codes. The respondents of interview and focus group discussion have opined their views to fulfill its requirement.

Table 5: Qualitative Data analysis

Alpha Numeric Code	Reference Explanation
IVCCU	Interview Vice Chancellor Chittagong University
IPVCRU	Interview Pro-Vice Chancellor Rajshahi University
IDJU	Interview Dean Jahangirnagar University
IDKU	Interview Dean Khulna University
IDCU	Interview Dean Chittagong University
IDIERCU	Interview Director Institute of Education & Research, Chittagong University
IDIERRU	Interview Director Institute of Education & Research, Rajshahi University
IUGCO 1	Interview University Grants Commission official 1
IUGCO 2	Interview University Grants Commission official 2
IUGCO 3	Interview University Grants Commission official 3
IMoEO 1	Interview Ministry of Education Official 1
IMoEO 2	Interview Ministry of Education Official 2
IMoEO 3	Interview Ministry of Education Official 3
ICHSKU	Interview Chairman Sociology Khulna University
ICHSRU	Interview Chairman Sociology Rajshahi University
ICHARU	Interview Chairman Anthropology Rajshahi University
ICHAJU	Interview Chairman Anthropology Jahangirnagar University
ICHPCU	Interview Chairman Political Science Chittagong University
ICHPRU	Interview Chairman Political Science Rajshahi University
ICHIRU	Interview Chairman Information and Library Science Rajshahi University
FSDUM1- FSDUM5	Focus Group Discussion Student Dhaka University –Male (1-5)
FSDUF1- FSDUF5	Focus Group Discussion Student Dhaka University – Female (1-5)
COO1- COO12	Classroom Observation Opinion 1-12

3.9 Mapping the Research Process

The research has study report follows the following pathway to complete:

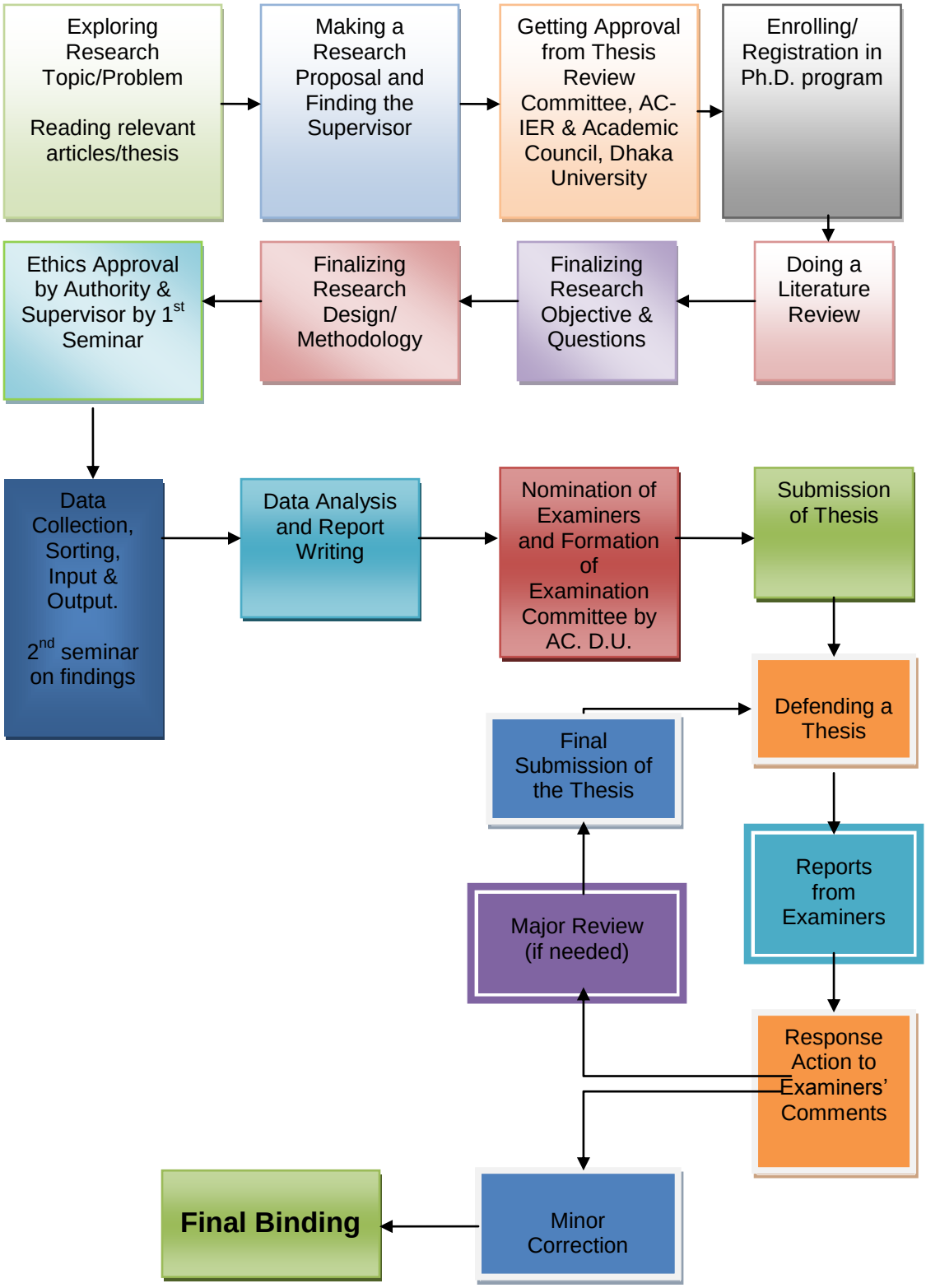


Figure 3.6: Mapping the research process

3.10 Limitations of the Study

The 5 public universities, only, has been used as the representative of the universities in Bangladesh among 37 Government and approximately 85 private universities. It was not possible to cover all the lecturers, assistant professors, associate professors and professors, some pedagogic experts, higher management in the university and UGC staff because of time constraints and the limited scope of this study. The sampling was limited because of the nature of the study. The private University also not is included in the study as sample.

3.11 Ethical Considerations

This section has discussed the handling of ethical issues during and after the research. There are several reasons why it is important to adhere to ethical norms in research. These include: promoting the aims of the research, such as knowledge and truth, and also, promoting the values that are essential to collaborative work; moral and social values, such as trust, mutual respect, fairness, social responsibility and human rights (Shamoo & Resnik, 2009). Ethics are generally considered to deal with beliefs about what is wrong or right, good or bad (McMillan & Schumacher, 2009).However, Wassenaar (2006) claims that one of the most important aims of research ethics is to protect the welfare of the research participants.

In doing this research the philosophical principles guiding ethical research are observed as closely as possible. Wassenaar (2006:67–68) mentions four

basic principles applicable to research, namely, autonomy and respect for dignity of persons, non-maleficence, beneficence and justice. In addition to Wassenaar's proposed guidelines, other researchers' views are also used to guide the researchers' ethical conduct in this project.

The research approach is based on human interaction; therefore these measures are taken in planning and executing the study to protect the stake-holders and participants.

3.12 Study Period

The study has taken place in five public universities in Bangladesh, and the research activities covered five years period since 2011 to 2015. The literature has been reviewed based on different secondary sources as referred during the study time. All the primary data has been collected personally from the respective samples as the representative of the population. The respondents have freedom fully on their own opinion through different tools used in the study. The tools development and piloting of tools has occurred in 2012. The primary data has been collected from different universities in different time during 2013 to 2015 in different phases.

CHAPTER 4
DATA ANALYSIS AND FINIDINGS

4.1 Prologue

This chapter presents and analyses the data collected from the respondents by means of the questionnaire, classroom observation, focus group discussion and interview as mentioned in the chapter 3. Data were analyzed both quantitatively and qualitatively where applicable. The following sub sections document the analysis of data and detail findings. This is followed by a sequential presentation and analysis of objectives that address the respective research sub-questions outlined in chapter 1. These subsections have presented the data on the existing situation of professional development and pedagogy (PDP), pedagogy practices and technology integration in the universities for improving quality into teaching and learning. This is followed by the present scopes, expectations and perception of teachers on PDP, and perception of the students, higher management which includes the identification of future course of action.

4.2 Participants' Personal Information

Participants' approaches towards the study are shaped by their characteristics. Analysis of participants' background, academic status and social standing provides a fair reflection of how these factors impact on their attitude to explore current situation and future action in teaching and learning. A total of 159 participants have returned the questionnaire distributed to two hundred targeted participants and 36 classrooms have observed subsequently with 360 students follow up FGD. The 159 teacher participants comprised 42 lecturers, 61 Assistant Professors, 27 Associate Professors and

29 Professors. Fifteen higher authorities from different universities (VCs, Pro-VCs, Deans and Chairman etc.) have been interviewed subsequently in dept with 6 other respondents from Ministry of Education (MoE) and University Grants Commission (UGC). However, for an in-depth analysis of their responses, comments and views, it is important to present a brief overview of the teacher participants' information, which includes their highest qualifications and experience and university wise distribution amongst others.

4.2.1 Teachers' Experience

The experience of the teacher respondents is important for covering representation of different age groups views and comments from various perspectives. Table 6 is shown the distribution of period of experience of the teacher in teaching in the university. It indicated that both new in teaching and long experienced university teachers' have been covered in the study.

Table 6: Distribution of teachers' experiences

SL	Length of Experience	Frequency	Percentage (%)
1	Less than 5 years	53	33.33
2	Less than 10 years	48	30.19
3	Less than 15 years	28	17.61
4	more than 15 years	30	18.87
Total		**N=159**	**100%**

4.2.2 Teachers' Educational Qualification

It appears from Table 7 that the participating teachers in this study have the highest qualifications, ranging from first degree to a doctoral degree. Few portion of teacher participant holds a Master of Science degree and is currently busy reading for the higher qualification. It might be because of this study sample are only Social Science faculty. However, data has revealed that most of the teacher (n=97) holds a master's degree (61.64%) in social science, whilst it is significant that more than one fourth (26.41%) of the teacher respondents (n=42) possess the highest doctoral degrees. Whereas very few portion (6.92%) of the teacher having degree in pedagogy (n=12). All the participants are involved teaching in social science disciplines or Bachelor/Master of Education at the different departments or institutes of the university in Bangladesh.

Table 7: Teachers' educational qualifications

SL	Name of Degree	N	%
1	Ph.D	42	26.41
2	M.Phil	3	1.89
3	MSS	97	61.64
4	MSc	5	3.14
5	M.Ed	9	5.03
6	B.Ed	3	1.89
Total		**159**	**100%**

4.3 Current Status of PDP in Universities

As indicated in the literature review, continuous professional development (CPD), a structured approach to learning helps ensure competence in practice and helps in the construction and adaptation of mutually shared networks of theory and practice. Hence, CPD is the primary hub for improving PDP at the university level of education. The 'training model' is when teachers are provided with opportunity to update their skills in order to be able to demonstrate their competence, while the 'award-bearing model' emphasizes the completion of award-bearing programs of training – usually, but not exclusively, validated by universities. The 'deficit model' is usually designed to address a perceived deficit in teacher performance. The main category is transformation, which includes 'action research' in which teachers themselves are learners and researchers, with a view to improving the quality of action within it. In this study, most of the teachers (82.40%) have claimed that the scopes of PDP were not existed in their own universities (Figure 4.1).

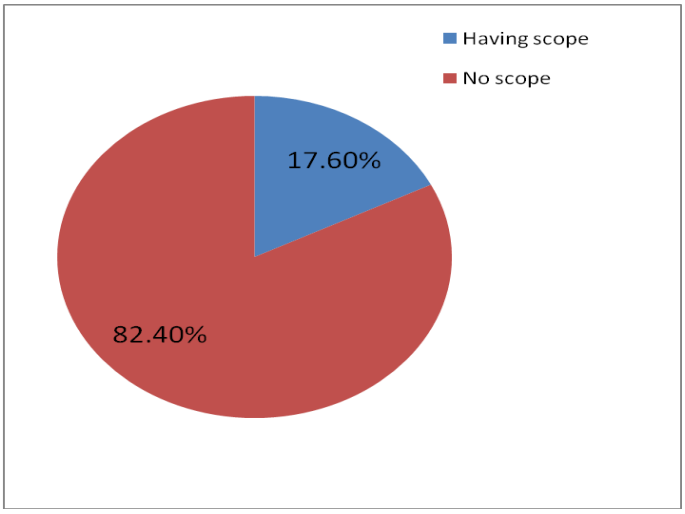


Figure : 4.1 Scope of PDP situation in own university

On the other hand, a very few of the teachers (17.60%) has opined that there were limited PDP programs in their own university for teachers. These are mostly, 'Advanced Research Methodology (ARM), Statistical Package for the Social Sciences (SPSS), Computer Basic Training (CBT), Bachelor of Education (BEd), Master of Education (MEd), Professional Training of Bangladesh University of Agriculture (BUA), Fresher Teachers Orientation Program by Graduate Training Institute (GTI) of BUA, Teachers Professional Development Program (TPDP) of BRAC and Teachers Pedagogical Development Program (TPDP) through HEQEP'. The qualitative data has further supported the scarcity of existing PDP programs. For example, one of the directors of the Institute of Education and Research (IER) informed, '*there is no PDP initiative officially in our university but we have this kind of program with INSPIRE-British Council'. (IDIERRU)*

Data has also revealed that Jahangirnagar and Khulna University have no PDP scope (100%) as shown in Figure 4.2. On the other hand, majority of the teachers from Chittagong (88%), Rajshahi (90%) and Dhaka University (62%) supported this view. It may be mentioned here that most of the PDP scopes existed in these universities are mainly related to workshops, seminars, issue based discussion by the senior colleagues and not by the professional 'teacher educators'. This is obviously, a shortcoming for increasing the quality of education at the tertiary level.

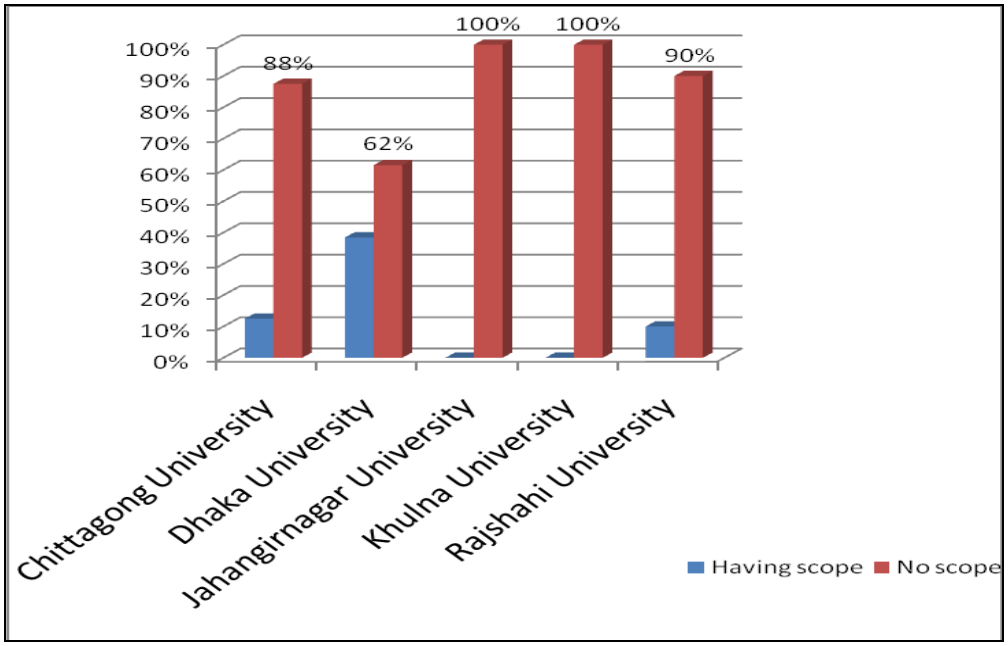


Figure: 4.2 Scope of PDP situation in different universities

The qualitative data has further supported this as the Vice Chancellor of a university has mentioned clearly that,

> *We do not have any kind of scope for teachers' professional development training program. Rather seminar, workshop and discussion session have been arranged rarely under few departments or faculty by our own financing. I personally feel that the university should have the scopes for teachers' professional development frequently after a certain timeframe. (IVCCU)*

One of the officials from UGC further claimed that,

> *There project namely HEQEP is open to all the universities and departments/institutes for innovative funding. They can apply to UGC for a fund and we are ready to support any kind of PDP program for the university teachers in the country. (IUGCP2)*

Data in Figure 4.3 related to availability of PDP courses in other university rather than their own university revealed as more than half of the teachers (56%) opined, the PDP is not available in other university so far they know. Significantly, one fifth university teachers (20.80%) did not know about the existence of PDP in other university. This portion might be the newly appointed young teacher. Only one fourth teachers (23.30%) opined that the other university had available PDP courses.

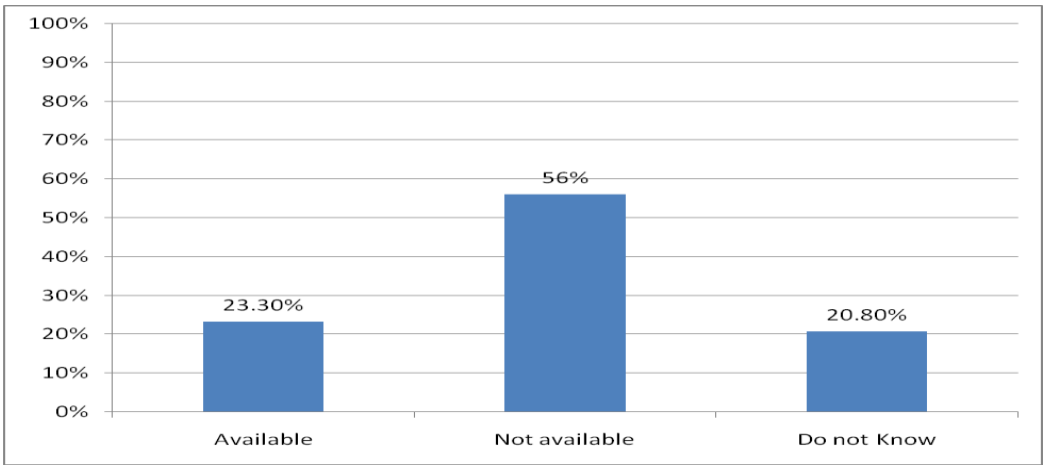


Figure 4.3: Availability of PDP in universities

4.4 University Teachers' Expectation on PDP

Figure 4.4 shows that most of the university teachers (96.20%) strongly felt that university authority should organize PDP courses in higher education. However, a little portion (3.80%) of teachers did not support these courses. This portion might be the senior teachers in the universities because of their traditional teaching and mentality for not coping with new changes. This data confirm that there is a demand for the proposed PDP training program and that the respondents are interested in enhancing the quality of their teaching.

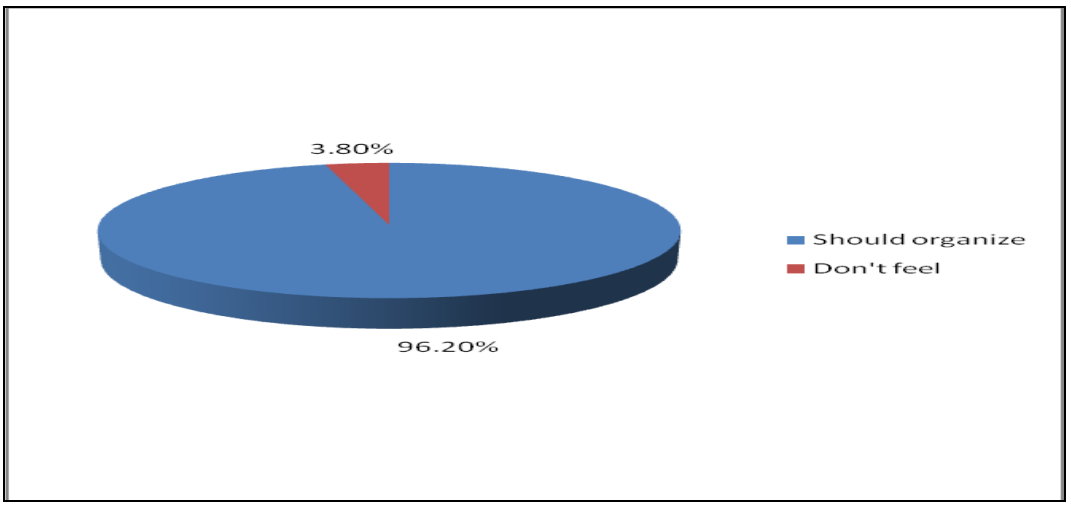


Figure: 4.4 University teachers' expectation on PDP

The students have also disclosed their positive views regarding the PDP training for their teachers. One of the female students has argued that,

> *'If our teacher does not upgrade their knowledge and skill with the paradigm shifting of teaching, how the teacher can be comfortable with their teaching? At the same time, we do not feel good with traditional teaching and learning. We expect our teacher to be updated with the changing knowledge and skills. (FGDKUS3)*

Moreover, the higher management has expressed that continuous professional development (CPD) is essential for university teachers. One of the deans has said,

> *We are planning to incorporate the PDP training program as a part of the continuous professional activities formally in the faculty. They should go with the training experience on the regular basis in the university working life. (IDUD1)*

The Table 8 further revealed that all the teachers of Dhaka, Jahangirnagar and Khulna universities (100%) have opined that authority should organize professional development and pedagogical courses for their development. On the contrary, very few numbers of teachers (6%) of Chittagong and one tenth number of Rajshahi university teachers (10%) did not feel these kinds of courses. This ratio might be the senior teachers in the universities because of their traditional teaching approaches and mentality for not coping with new changes. Most of teachers have emphasized to arrange the professional development and pedagogical program to develop their skill.

Table 8: Teachers' (N=159) expectation in different universities

SL	Name of University	Should organize		Do not feel	
		N	***%***	***N***	***%***
1	Chittagong University	30	94%	2	6%
2	University of Dhaka	52	100%	0	0%
3	Jahangirnagar University	24	100%	0	0%
4	Khulna University	11	100%	0	0%
5	Rajshahi University	36	90%	4	10%
Total		***153***	***96.2%***	***6***	***3.8%***

4.5 Teachers attitude toward Professional Development

Table 9: Teachers' (N=159) attitude toward PDP

Statements	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean	Std. Deviation
Professional development program requires and fosters the norm of continuous improvement for the university teachers	114	45	0	0	0	4.72	.452
Professional development prepares teachers to administer, interpret and effectively manage classroom teaching	120	36	2	1	0	4.73	.512
Professional development program is necessary for University teachers in Bangladesh	122	36	1	0	0	4.76	.442

Table 9 shows teachers' attitude towards professional development and pedagogical (PDP) program which may significant for implementation of the program. In the study, teachers' (N=159) attitude has been measured by using statistical analysis (Mean and SD) on the statements shown in table 9. Here, the scale has been defined as 5=Strongly Agree (SA), 4= Agree (A), 3= Neither agree nor disagree (N), 2=Disagree (D) and 1=Strongly Disagree (SD). If the Mean=more than 3 it refers positive attitude and if the Mean=Less than 3 it refers negative attitude. At the same time, Table 10 represent the significant level of data.

It appears from Table 9 that almost all the teachers have positive attitude (M=4.76) towards the necessity of professional development for the university teachers. However, only a teacher has neither agreed nor disagreed with this opinion. The teachers have also positive attitude (M=4.72) towards the

statement that 'Professional development program requires and fosters the norm of continuous improvement for the university teachers'. The teachers further express positive attitude (M=4.73) towards the statement that 'Professional development prepares teachers to administer, interpret and effectively manage classroom teaching'.

Table 10: Attitude significance

Statements	Mean Difference	95% Confidence Interval of the Difference	
		Lower	Upper
Professional development program requires and fosters the norm of continuous improvement for the university teachers	4.717	4.65	4.79
Professional development prepares teachers to administer, interpret and effectively manage classroom teaching	4.730	4.65	4.81
Professional development program is necessary for University teachers in Bangladesh	4.761	4.69	4.83

Note: significant at the confident level 95%

In addition, qualitative data has also supported the necessity of professional development as an emerging issue to ensure the effective teaching learning activities for university teachers. A Pro-Vice Chancellor has stated the following:

> *'Both professional development and pedagogic training courses are necessary for every university teacher. As been a bureaucrat or army officer is receiving training frequently so why not university teacher? We have to plan for this kind of training courses under Dean of Laws.'(IPVCRU)*

A student has also claimed that,

> *'It is obviously necessary for a university teacher to have training for good teaching. He/s should have experience on teaching before joining the university.' (FSDUM2)*

Similarly a female student added,

> *'Pedagogic training program for teachers can contribute to enhance the quality of teaching at our university. Moreover, it should be mandatory for every teacher and s/he might qualify through examination after foundation training like BCS cadre system.' (FSCUF3)*

4.6 Status of Teachers' Subject and Pedagogic Knowledge

Content knowledge is the teachers' knowledge about the subject matter to be learned or taught. This knowledge would include knowledge of concepts, theories, ideas, organizational frameworks, knowledge of evidence and proof, as well as established practices and approaches toward developing such knowledge. In practice, every teacher needs to have outstanding result in their background education both in school certificate and in higher education. In this study, most of the teachers (61.64%) hold MSS degree. A good number of teachers (26.41%) had PhD. Very few number teachers (1.89%) had M.Phil. degree. Those who had professional degree as BEd (1.89%) and MEd (5.03%), they might have been serving in Institute of Education and Research (IER).

The data also evident that all the newly appointed teachers fulfilled the requirement of appointment with a post-graduate degree in their respective field and most (92.45%) of the teachers had no pedagogic or teachers training experience but a few number teachers (7.55%) had degree in education. Among the having degree in Education portion, major of them might be working in the Institute of Education and Research (IER). A small number of

teachers achieved professional degrees on their own arrangement and interest other than IER teacher.

Qualitative data also supported the situation. A male student claimed that,

> *'Almost all teachers are joined just after completion of their Masters degree. Even they are not receiving any kind of training like BCS education cadre. It is really not acceptable that someone was student yesterday but today s/he is in the classroom as faculty without any training. Even though, they are working with only master's degree year after year in the department/institute' (FSDUM2)*

During classroom observation, data revealed that most of the teachers' (86.10%) had sound content knowledge. However, a small number of teachers (13.90%) had poor subject knowledge. No teachers' subject knowledge was under category of 'not acceptable' level.

Qualitative data further explored on this issue. One of the male students posited that,

> *'Teachers' content knowledge on the topic is adequate but they should give us real example.'(FSJUM4)*

Another male student mentioned the limitation of teachers' content knowledge as following:

> *'Most of the teachers deliver their lesson theoretical rather practical. Teacher should give us example; explain with different assimilation related to the content.' (FSRUM1)*

A female student further said,

> *'Teachers should encourage the students to gather job oriented knowledge and skill along with subject knowledge.' (FSKUF5)*

The data also revealed that more than one fourth teachers (27.8%) always took textbooks in the classroom. Almost half of teachers (47.2%) sometimes used textbook in classroom teaching. On the other hand, almost one fifth

teachers (19.4%) never used textbook in the classroom as teaching learning materials.

4.7 Subject Knowledge Development Initiatives

Figure 4.5 presents data related to the current practice of teachers taking initiatives for developing subject knowledge. Majority of teachers (85.30%) accomplished their higher degree with their own individual initiative. Some teachers (12.80%) did their degree supported by the UGC/Government initiative. A very few teachers (1.90%) got opportunity for doing higher degree supported by their working university.

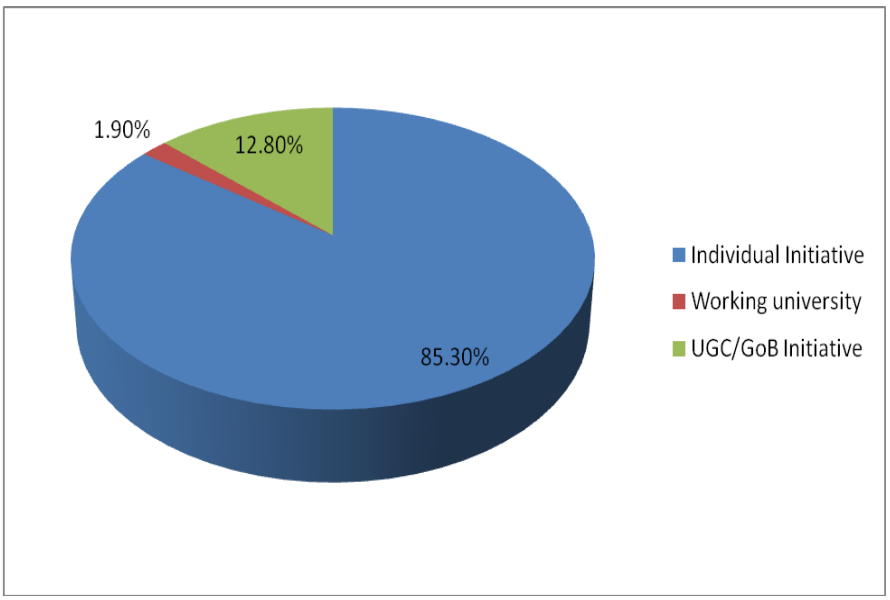


Figure: 4.5 Teachers' knowledge development initiative

4.8 Class Size and Ranges of Student Per Class

The data indicated that most of the teachers (93.70%) have informed about the large class size in the university classroom. Classroom observation revealed he ranges of students per class which are shown in figure 4.7. It appears from data that only 11.10% of classroom had students between 1

and 29 and more than an half quarter of the teachers (13.90%) have taught apparently standard class sizes of between 30 and 50 students.

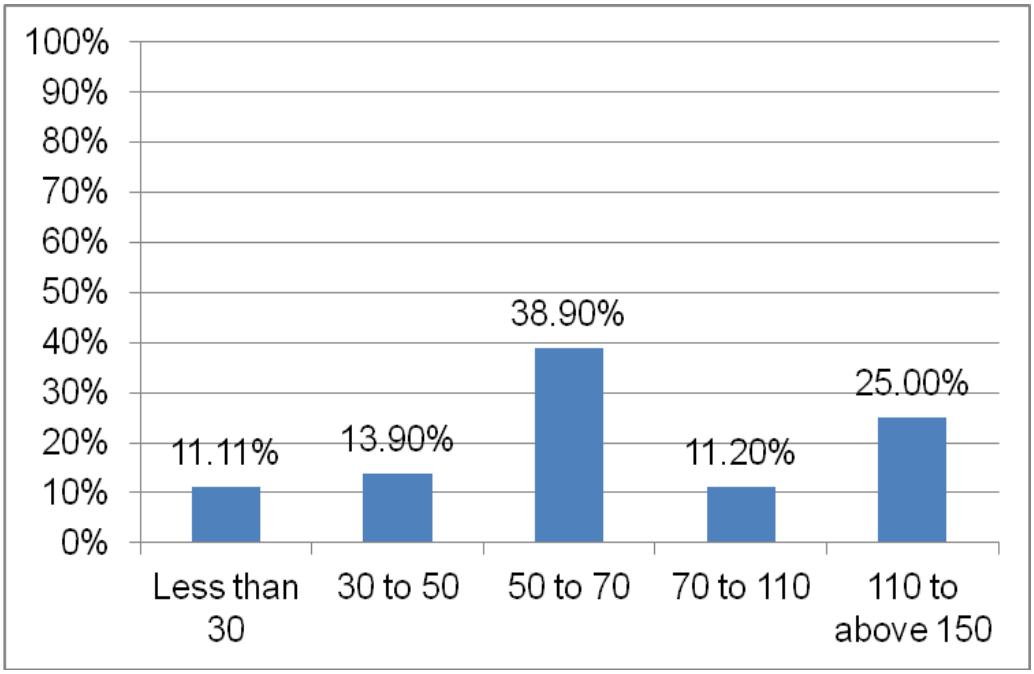


Figure 4.6: Ranges of student in classroom

More than one third of the teachers (38.90%) taught even larger class size of between 50 and 70 students. The data also revealed that 11.20% classroom had students number between 70 to 110. Surprisingly, one fourth (25.00%) class had more than large sizes of students between 110 to above 150.

The qualitative data also supported this view. For instance, one of the male students of a university has claimed that,

> *'In our class, teacher and student ratio is 1:120. It is huge. Student-teacher relationship is unsatisfactory. They are not friendly.' (FSJUM4)*

4.9 Teaching Learning Environment in the Classroom

Classroom observation revealed that three fourth classrooms had sufficient air and light and one fourth of the classrooms did not have proper ventilation system.

Furniture

According to a great majority of teachers (91.7%), there was adequate classroom furniture for teaching, but the rest did not support this view.

These furniture has included the following: Chair, Table, Bench, Whiteboard, Blackboard, Fan, Light, Projector and Sound System. During FGD, one female student has clarified in this way,

> *'The seating arrangement of our classroom is chair and desk. It is well decorated. There is adequate air, fan and light facilities, but it is under construction. So we are in classroom shortage.' (FSKUF3)*

Another male student has expressed his satisfaction and dissatisfaction with this remark,

> *'The seating arrangement is quite good and comfortable. There is adequate air and light in the classroom. There are no generator facilities as alternative electricity supply.' (FSRUM5)*

Seating Arrangement

Around two third teachers (61.10%) claimed that the present situation of the classroom was not suitable for the altering seating positions. However, rest (38.9%) supported that it was possible.

Classroom Space

The teacher respondents were decided equally on the opinion of free space in the classroom. About half was in favor of sufficient free movement of teachers

and students in the class and other half was in opposite view. Classroom observation data ensured that in most of the classes, the space for movement was in sufficient.

During FGD, one student told that,

> *'When teacher used Multimedia in the classroom she/he had to stand beside the laptop to continue her/his lesson due to lack of space. Otherwise, they could move around the classroom.' (FSDUM1)*

During class observation, data also revealed that more than half of the classrooms space (58.80%) were appropriate and enough in terms of student numbers. The rest of the classrooms (41.70%) were not spacious in terms of number of students. However, large size classroom was the common phenomenon in the universities. In some cases, the classrooms were not spacious in terms of number of students.

Attentiveness of Students in the Classroom

The modest portion of teacher has supported that teaching should be teacher-centered. Attentiveness of students depends on various indicators though large class might be a reason including teachers' voice, intonation of teachers' presentation, attracting teaching aids etc. During classroom observation, data claimed in figure 4.7 that more than one-third (36.10%) students were attentive in the classroom. More than half students were attentive moderately. The rest of the students (8.30%) did not attentive.

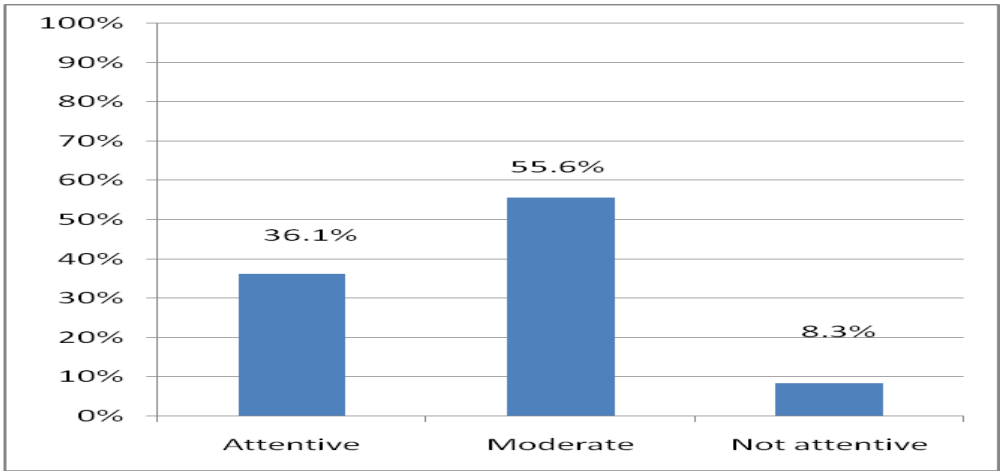


Figure 4.7: Students attentiveness in classroom

Teacher Student Relationship

During class observation, data revealed that teacher-student relationship was friendly in more than one-third classes (36.10%). However, the rest of the classes did not have friendly relationship between teacher and student. This might show their traditional views on teaching and the fact that they might not expect to be involved in student oriented teaching.

The qualitative data also expressed that the teachers were not usually friendly with students in classroom teaching. A male student clarified in this way,

> *'In our class, teacher and student ratio is 1:125. It is large number of students. Student-teacher relationship is unsatisfactory. They are not friendly.' (FSRUM3)*

Teaching Learning Materials

It appears from figure 4.8, data revealed that more than half of teachers (51.60%) claimed that they had adequate teaching learning material (TLM). However, the rest half expressed the opposite views. All teacher of Khulna University and newly opened subject teacher opined that they had inadequate teaching learning materials. They mentioned that they had lack of fund from

government or higher authority. However, the data exposed that the old university was better position than new university in terms of teaching learning materials.

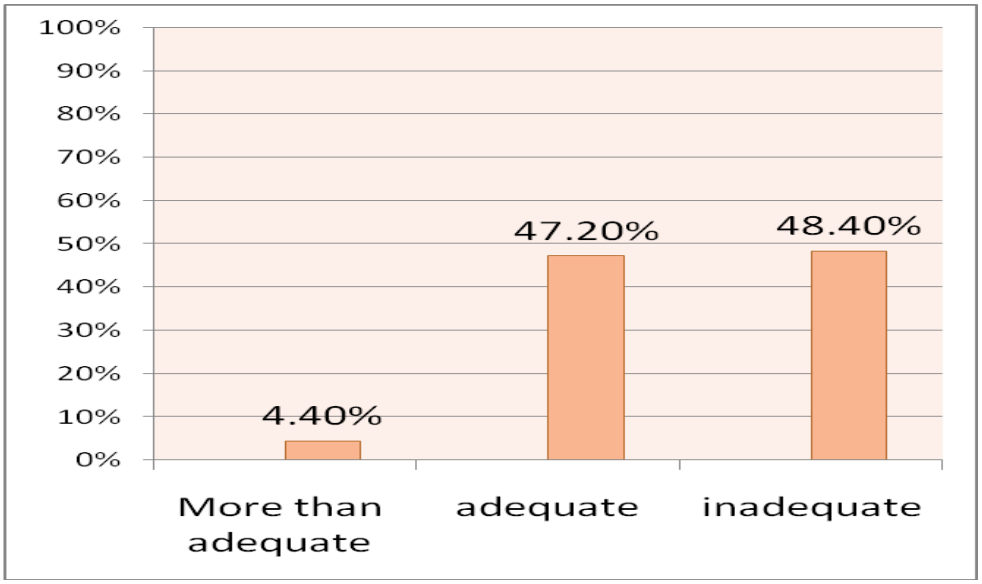


Figure 4.8: Teaching learning materials in classroom

During class observation, data further revealed that a small number of teachers (13.90%) used teaching learning materials (TLM) in the classroom. Around half of teachers (47.20%) used TLM sometimes. The rest of the teachers (38.90%) never used TLM in the classroom.

During FGD, A female student remarked spontaneously,

> *'We have only one projector but that is unusable. There is no alternative power supply in the class. Multimedia class hampered for electricity. Internet and wi-fi are not available in the classroom. Mainly whiteboard is used as teaching materials.' (FSJUF2)*

Handout for Students in Classroom

TLM is important for teachers to ground the use of TLM such as Text Book, TV, Video clip, Tape Recorder, BB, WB etc in the classroom. At the same time, handouts are also significant materials in teaching learning activities.

During class observation, data confirmed that the large number of teachers (63.90%) never delivered handouts to the students in the classroom. A small number of teachers (2.80%) delivered handout to the student after class ending. Surprisingly, the rest of the teacher (16.70%) always delivered handouts to the students.

4.10 Teachers Entering Time

During class observation, data revealed that most of the teachers (72.20%) entered into the classroom in late but rest of the observed class teachers (27.80) started the class in time. It indicated that most of the university teacher did not maintain the professional commitment for conducting their class in time.

During interview with higher authority, it appears from data that the higher authority was concerned on the issue that most of the university teachers were used to take class in late. Similarly, the students were clearly suffered for this reason. A Pro-Vice Chancellor suggested incorporating ICT system for controlling of the classroom conduction time by the teachers. He postulated with this remark,

> *'Automation sign-in technology need to implement in the universities for at least regarding class time of the teachers. Radio frequency card need to use for teachers' entry into classroom with duration.' (IPVCRU)*

A male student expressed his opinion in this way,

> *'The teachers should have strict time bound for at least taking class or not. Sometime they did not notice us, even, we have been waiting for a long time in the classroom but we never know he/she will take the class or not. It is really intolerable and un-expected from the teacher of the university.' (FSJUM1)*

Similarly, another female student mentioned,

> *'Teachers are busy otherwise. Most of them involve in politics, consultancy and private university teaching. They cannot complete their course in time. They neglect to complete the course rather other job.' (FSDUM5)*

Finally, another female student made comment as follows:

> *They are also eager to participate in evening program more than regular classes. Students are afraid of saying anything to teacher because they are all in all in university (FSDUF1)*

Class Duration

There was different time duration for class conduction officially in different universities shown in figure 4.9. During class observation (N=36), more than one-third class (36.10%) had 1 hour duration. More than half of the classes (55.60%) held for 40 to 45 minutes and the rest of classes conducted for 50 minutes. Data reflected that the class duration of universities was comparatively less time regarding higher order skill development for university students.

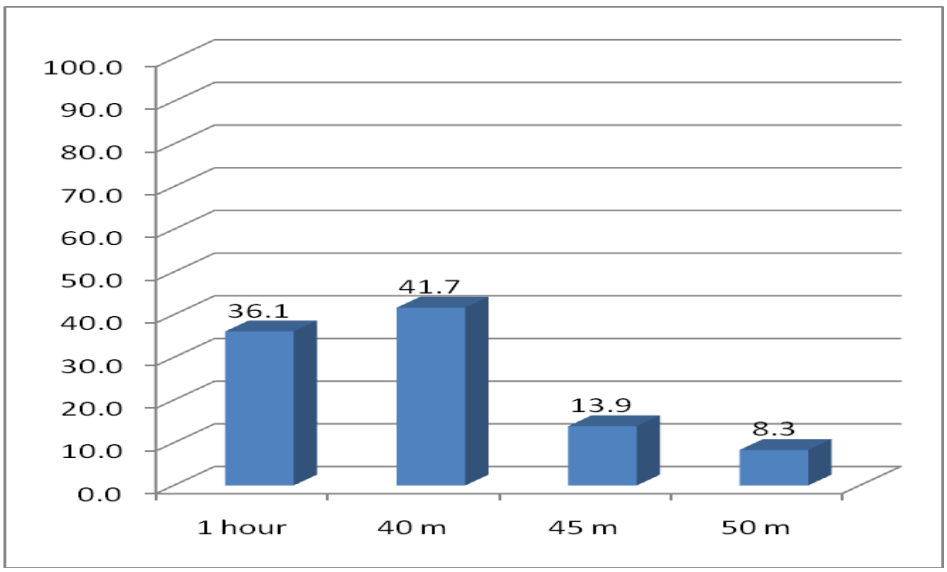


Figure 4.9: Official class duration in different universities

4.11 Teachers' Activity in Classroom

During class observation (N=36), data revealed in table 11 that the highest portion of teachers (38.90%) in classroom gave good level attention to all students. More than a quarter portions of teachers (27.8%) did fair level of attention to all students in classroom and the rest did not. Data also confirmed

that one third of teachers (33.3%) gave opportunity to ask question by students in classroom teaching. However, more than one third of teachers (38.9%) did not give questioning opportunity by students.

Table 11: Attention, questioning and using blackboard

Activities	Good		Fair		Poor		Total	
	N	%	N	%	N	%	N	%
Teacher attention to students	14	38.9	10	27.8	12	33.3	36	100
Opportunity to ask questions by students	12	33.3	10	27.8	14	38.9	36	100
Using blackboard by teachers	10	27.8	10	27.8	16	44.4	36	100

It also appears from table 9 that around one fourth university teachers (22.20%) have used White board/Black Board in the classroom properly and rest one fourth used (27.80%) fairly. However, around half teachers (44.4%) did not use whiteboard/Backboard in classroom teaching learning.

Qualitative data also supported the situation regarding the use of blackboard or whiteboard in the classroom. A female student posited in this way,

> *'Most of the teachers use whiteboard as teaching materials. There is no use of internet in classroom. Teacher usually prepared their lesson slide at home to teach us. Young teacher are used to use multimedia and aged teacher do not use multimedia.' (FSRUF3)*

Similarly, a male student claimed with remarks,

> *'Most of aged teachers use whiteboard but comparatively young teachers use laptop, multimedia in the classroom. They use their personal dairy for key note and reference books.' (FSDUF5)*

Data also revealed, during class observation, that a huge number of teachers (83.30%) had loud voice for students understanding but rest of teachers'

portion (16.70%) did not use loud voice properly to communicate with the students *(figur*e 4.10). The voice of a teacher is the main important way to communicate with the students in classroom.

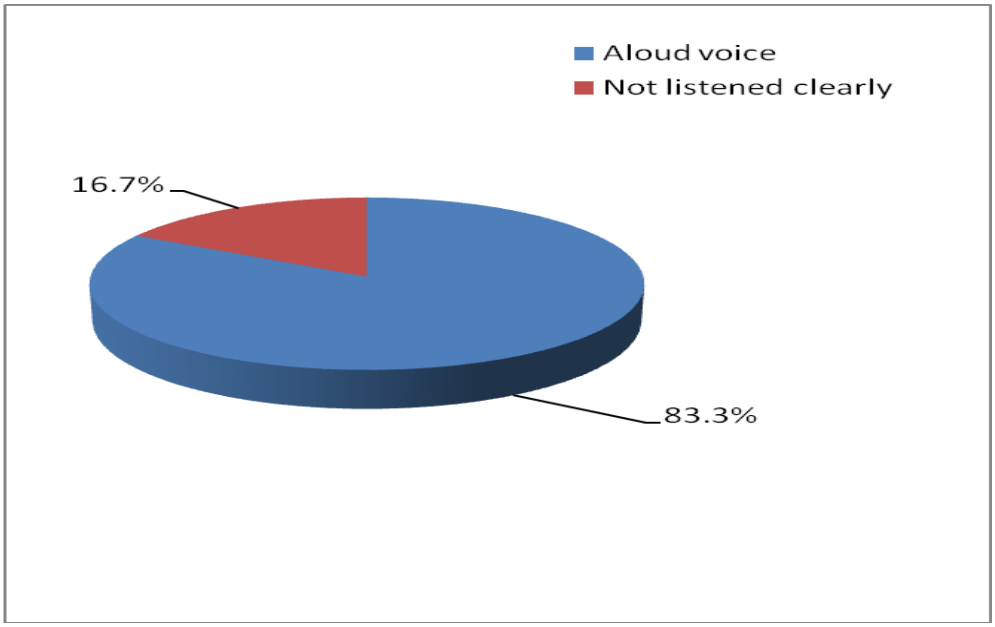


Figure 4.10: Teachers' voice in classroom

4.12 Techniques and Methods Used in Classroom

A teacher could use different techniques and methods in classroom for effective learning of student. Table 12 shown the data related to use of different techniques and method observed during classroom observation (N=36) by university teachers. It disclosed that more than a quarter teachers (27.80%) inspired their students for learning always and the majority teachers (63.90%) seldom inspired students for learning in classroom. The rest of teachers did not do it.

Table 12: Teachers classroom practices

Activities	Always		Seldom		Never		Total	
	N	%	N	%	N	%	N	%
Teacher inspired students	10	27.8	23	63.9	3	8.3	36	100
Lecturing by teachers	30	83.3	6	16.7	0	0	36	100
Participatory techniques	8	22.2	12	33.3	16	44.4	36	100
Used group work/discussion	4	11.1	0	0	32	88.9	36	100
Used pair work	0	0	5	13.9	31	86.1	36	100
Applied debate technique	1	2.8	5	13.9	30	83.3	36	100
Applied Socratic approach	6	16.7	23	63.9	7	19.4	36	100
Field work	4	11.1	6	16.7	16	72.2	36	100

Data also found that more than three-quarter teachers (83.30%) always used lecturing in classroom teaching and the rest teachers (16.70%) sometime used lecture method with other methods. The qualitative data also supported using of lecturing by teachers. A female student said,

> *Most of the teachers use lecture method in the classroom. Sometimes some teachers instruct for practical work or field work. (FSRUF1)*

Around half teachers (44.40%) never used participatory techniques in the classroom and one-third of the teachers (33.30%) sometime used these techniques. But less than a quarter teachers (22.20%) always used participatory techniques in classroom teaching. Qualitative data also claimed the same. A male student said in this way,

> *Our teachers never used participatory techniques for the students. Students rarely get opportunity to participate in classroom. Usually the teachers lead the class by lecturing. Sometime we have different presentation sessions on selected topic as part of assignment or project work.*

Group discussion forum is another emerging strategy that could influence teachers' pedagogical practices in classroom. Data revealed in table 10 that majority of university teachers (88.90%) never used group discussion in their teaching learning in classroom. However, a few teachers (11.10%) used group work or group discussion techniques in classroom teaching. It also appears from table 10 that majority of the teachers (86.10%) never applied pair work strategy in their classroom teaching and a small portion of teachers (13.90%) used pair work `seldom' in classroom.

Different teaching techniques make the student interest to the learning and debate strategy explores the critical logical thinking of university student. This could be an effective technique for teaching learning in higher education classroom. During class observation, data revealed that a large proportion of the teachers (83.30%) never used 'debate' technique and more than one-tenth of the teachers (13.90%) used 'debate' as teaching technique `sometimes' in the class teaching. The rest of the teachers (2.80%) used this technique in teaching on the regular basis.

The source of student knowledge development is based on question-answer process. Thus, this method is highly popular in education from the very beginning of development of human civilization. Less than one fifth of the teachers (16.70%) used always 'question-answer (Socratic approach)' in the classroom for their teaching learning approach. The highest portion of the teachers (63.90%) used Socratic approach 'sometime' in the classroom. Less than a quarter proportions of teachers (19.40%) never used 'question-answer (Socratic approach)' technique in their teaching. Thus, it is evident that the

teachers of university are used to use the traditional lecturing only rather applications of other method like Socratic approach.

Similarly, the student has mentioned in the focus group discussion frankly regarding the issue. One of the male students has mentioned in this way that,

> *'Students sometimes have questions in their mind, but they are not motivated to ask questions in the class time. Teachers ask the students if they have understood the topic only after he or she has completed the class.' (FSCUM2)*

Field work is a kind of activities for comprehending facts, art facts and social phenomena in social science discipline. It gives clear picture of theory into practice. Thus, it has significant role on teaching and learning process as a technique. In table 12 data claimed that more than half of the teachers (72.20%) never applied 'field work' as a learning strategy but a good number of teachers (16.70%) applied this technique 'seldom', in teaching. Significantly, the rest of the teachers (11.10%) have applied 'field work' technique in their teaching learning activities 'always'. The key reasons might be the fact that some disciplines (e.g. social sciences) curriculum incorporated field work as mandatory for all the students e.g. Social Welfare, Sociology, and Anthropology.

4.13 Lesson Planning

A lesson planning related question has incorporated in the study. About three-quarters of the teachers (72.20%) did not make written 'lesson plan' before teaching in the classrooms. Moreover, they identified the 'lesson planning' as least important for teaching in classroom. Data found (Figure 4.11) that more than one-seventh (16.70%) of the teachers always made

lesson plan. The study indicated that time management is thought to be a very important element of a lesson plan but few teachers (5.60%) acknowledged it as the 'least important' element for teaching.

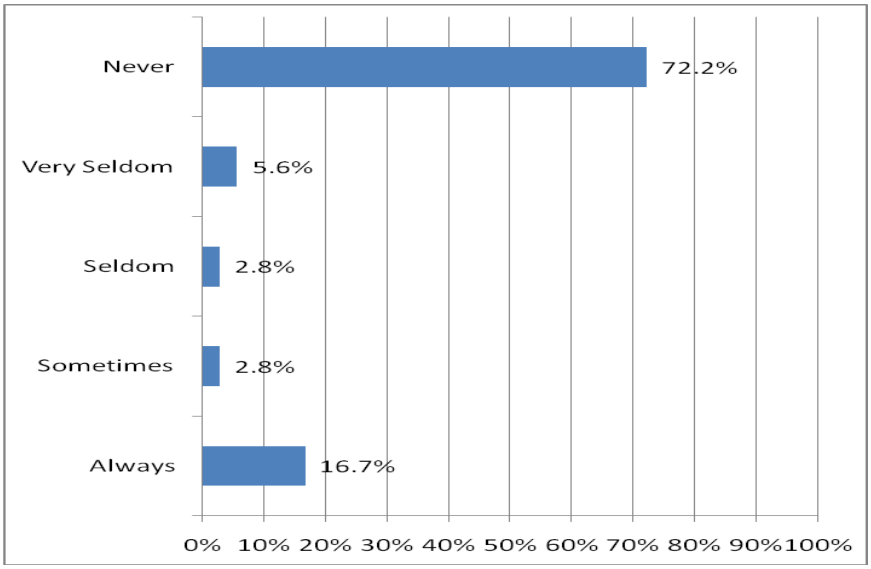


Figure: 4.11 Lesson planning

4.14 Teachers' Attitude on Teaching

Table 13: Teachers' (N=159) attitude toward pedagogical issues

Statements	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean	Std. Deviation
A teacher should be friendly with the students in classroom teaching	116	32	0	0	11	4.52	1.042
A teacher should be autocrat in classroom teaching	3	17	6	51	82	1.79	1.056
Classroom teaching should be student-centered	106	35	9	5	4	4.47	.926
Classroom teaching should be teacher-centered	17	37	18	59	28	2.72	1.292
Self evaluation of teacher can improve the teaching quality	139	18	0	2	0	4.85	.453
Assessment by the students can contribute to enhance the teacher's teaching	70	80	3	4	2	4.33	.752

Table 13 shows teachers' attitude towards pedagogical strategies and techniques which have impact on teaching and professional improvement. In the study, teachers' (N=159) attitude has been measured by using statistical analysis (Mean and SD) on the statements shown in table 13. Here, the scale has been defined as 5=Strongly Agree (SA), 4= Agree (A), 3= Neither agree nor disagree (N), 2=Disagree (D) and 1=Strongly Disagree (SD). If the Mean=more than 3 it refers positive attitude and if the Mean=Less than 3 it refers negative attitude. At the same time, Table 14 presents the significant level of data.

Data in Table 13 shows the teachers have positive attitude (M=4.52) towards 'friendly with students in classroom' teaching. It indicates that teachers are mostly 'strongly agree' towards the statement. It appears from data that teachers have negative attitude (M=1.79) towards the statement that 'Teacher should be autocrat'. A portion of teachers think positively towards 'teacher autocracy' in classroom, they might be in the senior teachers who are in traditional.

The qualitative data references supported that the teachers are not usually friendly in their teaching. One of the female students has clarified that,

> *'Student-teacher relationship is unsatisfactory. Teacher is always in commanding style. They are autocratic. But young teachers are better than aged teacher on the basis of relationship. But student politics make it critical. Usually student-teacher rapport building depends on political and regional issues.' (FSCUF1)*

Statistical result also exposed that the majority teachers positively agreed with the statement that 'classroom teaching should be student-centered'. A few number of teachers disagreed that 'classroom teaching should be student-centered.' It also revealed (Table 13) that the teachers have negative attitude towards the statement of 'teaching should be teacher-centered'. However, it found that a portion of teachers were neutral.

A great majority of the teachers strongly agreed to the statement: 'self evaluation of teacher can improve teaching quality'. This positive attitude (M=4.85) could contribute to implement self evaluation process in the university. Similarly, the data also revealed (Table 13) that almost all the teachers have positive attitude (M=4.33) towards the statement of 'teachers' evaluation by the students could improve their profession. Few of the teachers (4+2) disagreed and a very few teachers (3) was neutral. This portion might be the senior teachers. They have carried out the traditional views. They might not be interested with the new change.

The qualitative data also supported it e.g. a female student commented as follows:

> *There is no evaluation system for teacher by students. Students also do not make complain against teacher because of their result. (FSDUF4)*

The data in Table 13 is significant at 95% confidence level shown in Table 14 in the next page.

Table 14: Attitude significance

Statements	Mean Difference	95% Confidence Interval of the Difference	
		Lower	Upper
A teacher should be friendly with the students in classroom teaching	4.522	4.36	4.69
A teacher should be autocrat in classroom teaching	1.792	1.63	1.96
Classroom teaching should be student-centered	4.472	4.33	4.62
Classroom teaching should be teacher-centered	2.723	2.52	2.93
Self evaluation of teacher can improve the teaching quality	4.849	4.78	4.92
Assessment by the students can contribute to enhance the teacher's teaching	4.333	4.22	4.45

Note: significance at the confident level 95%

During classroom observation (N=36), it appears from figure 4.12, data revealed that the half of the teachers (50.00%) classroom teaching were overall enjoyable and the rest half did not enjoyable to the learners.

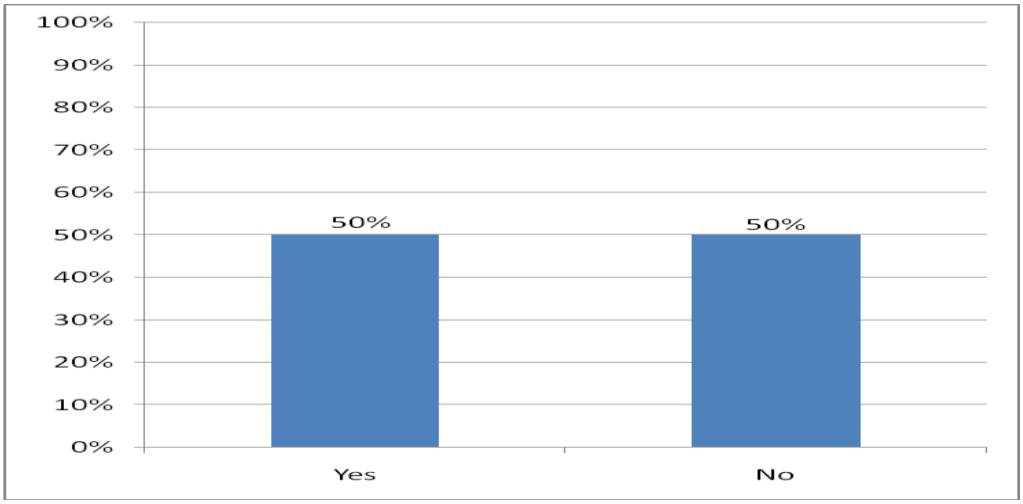


Figure 4.12: Enjoyable classroom

The qualitative data also supported that the classroom environment and pedagogical practices of teachers are not enjoyable. A male student confirmed that,

> *The overall learning environment is not enjoyable in classroom. (FSKUM4)*

4.15 Medium of Instruction

Language is the main media of communicating in classroom. During class observation (N=36), data revealed that more than two third of the teachers (69.40%) always used Bangla language in the classroom and around one fourth of teachers (22.20%) used Bangla sometimes. The rest of the teachers (8.30%) never used Bangla language in their teaching as instruction medium. Qualitative data also supported the findings as a male student mentioned, 'm*ost of the teachers deliver their lessons in Bangla.' (FSRUM3)*

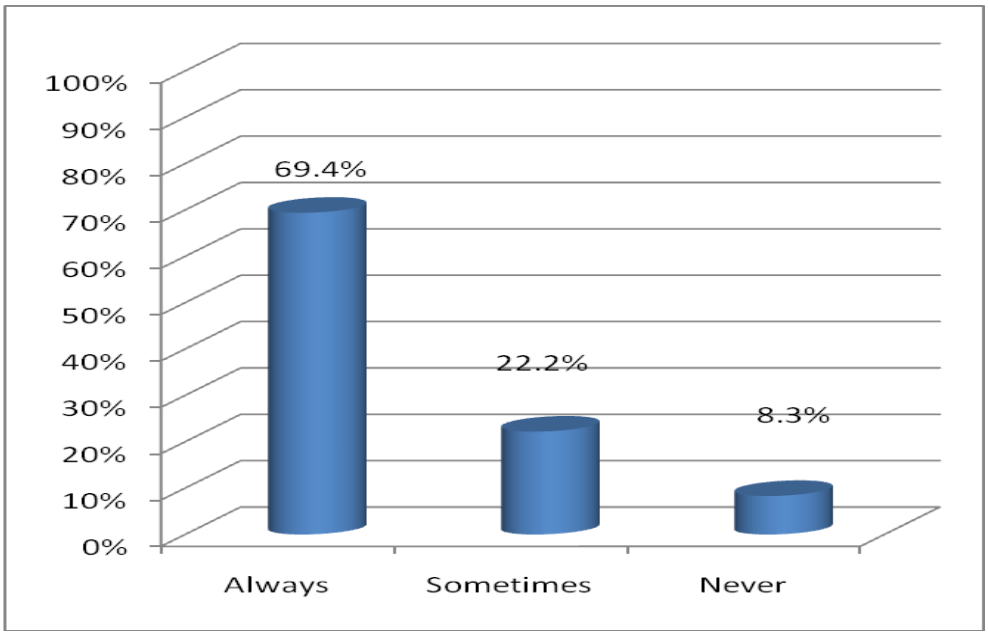


Figure 4.13: Level of using Bangla in classroom

The data (figure 4.14) exposed that a small number of university teachers (11.10%) always used English and a great majority of teachers (80.60%) sometime used English as medium of instruction in classroom. The rest of teachers (8.30%) never used English language in their teaching.

During FGD, a female student said in this way,

> *Teacher should use English language most of the time in the classroom so that the students can be encouraged to speak in English. (FSJUF4)*

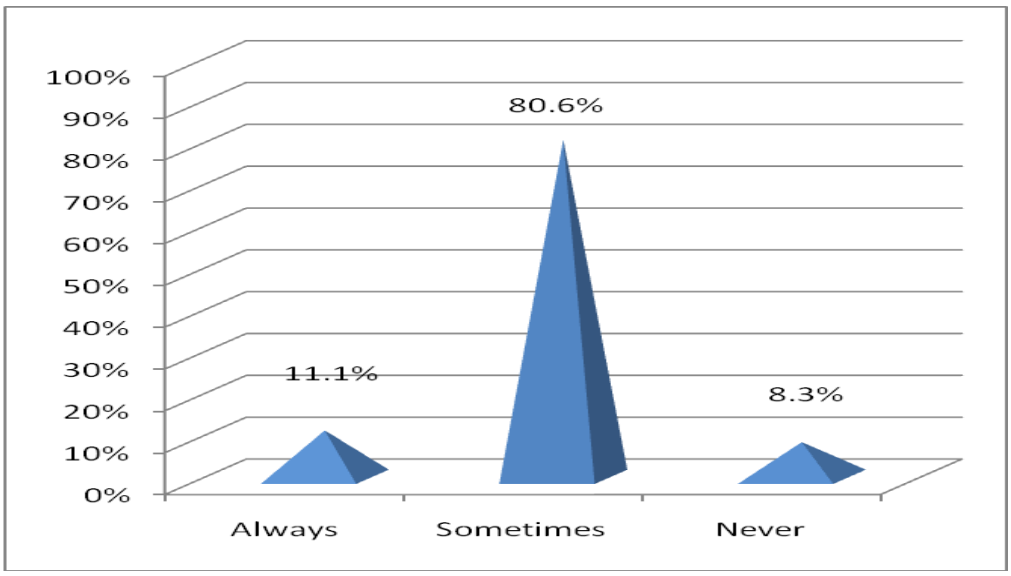


Figure 4.14: Level of using English in classroom

4.16 Learning Assessment in Classroom

Lesson assessment is one of the significant systems in teaching learning. This is highly effective for ensuring students learning in classroom. They can share and understand their lesson in an interactive way through assessment for learning. During class observation (N=36), the data (figure 4.15) disclosed that two third proportions of teachers (75.00%) did not assess their lesson in the classroom. On the other hand, only one third teachers (25.00%) assessed their lesson.

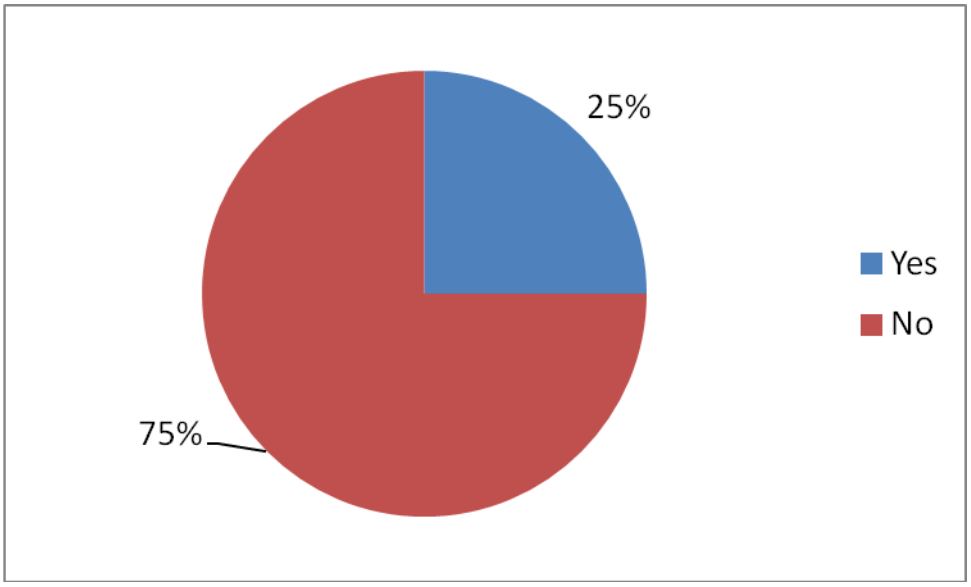


Figure 4.15: Lesson assessment

The qualitative data also supported that the teacher usually did not assess their teaching lesson properly. One of the students claimed that,

> *Teacher assesses learning achievement after the class only asking some verbal questions.' (FSDUF5)*

4.17 Nature of Evaluation System

Various kind of assessment procedures were exercised by the teachers (N=159) in university education. Students got certificate through these processes. The data (figure 4.16) explored that written and oral test were common (100%) in university. There were three types of question in written system e.g. essay type, short essay type and MCQ. Around nine tenth of evaluation and assessment system (89.30%) was essay type items. There were almost two third (73.00%) system was short essay type items. Some of the teachers (12.60%) used MCQ items. Around one third of the teachers (31.40%) assessed their students by the group work. Around a quarter of the teachers (22.60%) evaluated their students by individual work.

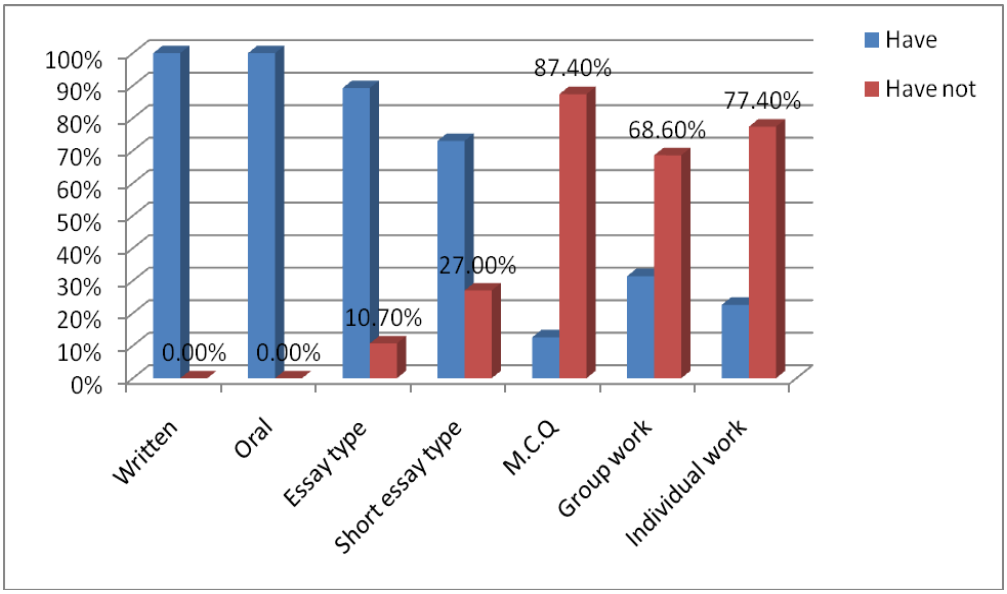


Figure 4.16: Nature of evaluation and assessment

The qualitative data also exposed that the university teachers habituated to use traditional assessment system mostly in their departments. On the contrary, the students expected to introduce scientific and logical assessment system creatively by the teachers in the university. A male student said with remarks,

> *'Teacher should introduce more creative assessment process. Actually, they feel bored attending the same types of examination every time.' (FSJUM3)*

Another student argued that the examination system in the university should be in English medium as they had to compete globally with other students. She expected that, *'Examination should be in English medium'. (FSJUF3)*

4.18 ICT Infrastructure in Classroom

During classroom observation (N=36), it appears from Table15, data demonstrated the availability of different ICT equipments in the classroom in the universities.

Table 15: ICT infrastructure in university classroom

SL	ICT Equipments	Available		Not available		Total	
		N	%	N	%	N	%
1	Power supply	36	100.0	0	00.0	36	100
2	Alternative power supply	31	86.1	5	13.9	36	100
3	*SMART/Electric Board*	0	0	36	100.0	36	100
4	Multimedia in classroom	27	75.0	9	25.0	36	100
5	Computers in classroom	6	16.7	30	83.3	36	100
6	Internet in classroom	14	38.9	22	61.1	36	100
7	*ICT lab in department/institute*	15	41.7	21	58.3	36	100
8	*Computers for Official Work*	32	88.9	4	11.1	36	100

Source: Classroom Observation

The power supply could be treated as the foundation of the ICT infrastructure of digitalized the classroom. In this connection, power supply need to be available in all classrooms for integrating ICT tools into pedagogy practices. Significantly, data revealed that the power supply was available in all classrooms (100%) in the universities. However, alternative power supply is supportive to implement ICT tools in teaching learning activities in classroom. Thus, having alternative power supply is very much significant for continuing teaching learning activities without any kind of interruption. Unfortunately, data (Table 15) exposed that most of the classroom (86.1%) had no alternative power supply. A few classrooms (13.9%) had alternative power supply. The digital tools also need to be available in the classroom firstly. Then the teachers need to be skilled with the tools for integrating ICT tools teaching learning. Unfortunately, there had no SMART/Electric board in classrooms (100%) in universities.

During interview, a Vice Chancellor supported the situation of ICT infrastructure in classroom. He expressed with remarks,

> *'ICT infrastructure is available in the department office but it is not available in all classrooms. We are planning to do it step by step e.g. student ID and registration.' (IVCCU)*

Data (Table 15) also exposed that one fourth of the classrooms (25%) had not installed multimedia for teaching and learning in the universities. On the contrary, most of the (75%) classrooms had multimedia.

The qualitative data disclosed the same situation of multimedia and alternative power supply. One of the female students mentioned that,

> *'There is no generator facility as alternative electricity supply. Our department is lack of Multimedia facilities though few teachers are expert in ICT. (FSKUF1)*

A Pro-Vice Chancellor identified the limitations of ICT tools in universities. He said in this way,

> *'HEQEP project contributed a lot to develop ICT infrastructure. But some departments are doing so on their own funding in universities. Still ICT infrastructure is not at the satisfactory level.' (IPVCRU)*

Data (Table 15) also disclosed that most of the classrooms (83.3%) had no computer for teachers' use in teaching learning. The study identified that a few classrooms (16.7%) had computers for using in teaching learning. Data further revealed that most of the classrooms (61.1%) had no internet connection for using in teaching learning and finding resources.

The data has demonstrated in Table 15 that more than half of the departments and institutes (58.3%) had no ICT laboratories for students and teachers. Less than half of the departments and institutes (41.7%) had ICT

laboratory. Surprisingly, data also demonstrated that most of computers (88.9%) used for official work. On the other hand, still a few university offices (11.1%) had no computers even for official uses.

4.19 Use of Tape-recorder/TV/Video Clip in Classroom

During class observation (N=36), data disclosed that all the teachers (100%) never used `tape-recorder' in the classroom as a teaching-learning material (TLM). A small number of the teachers (15.90%) sometimes used TV/video clip in teaching learning and a very few portions of them (5.60%) seldom used 'TV/Video clips' as teaching tools (Figure 4.17). It also significant that more than three-quarters of the teachers (80.20%) 'never' played 'Video/TV' as teaching tools in classroom teaching.

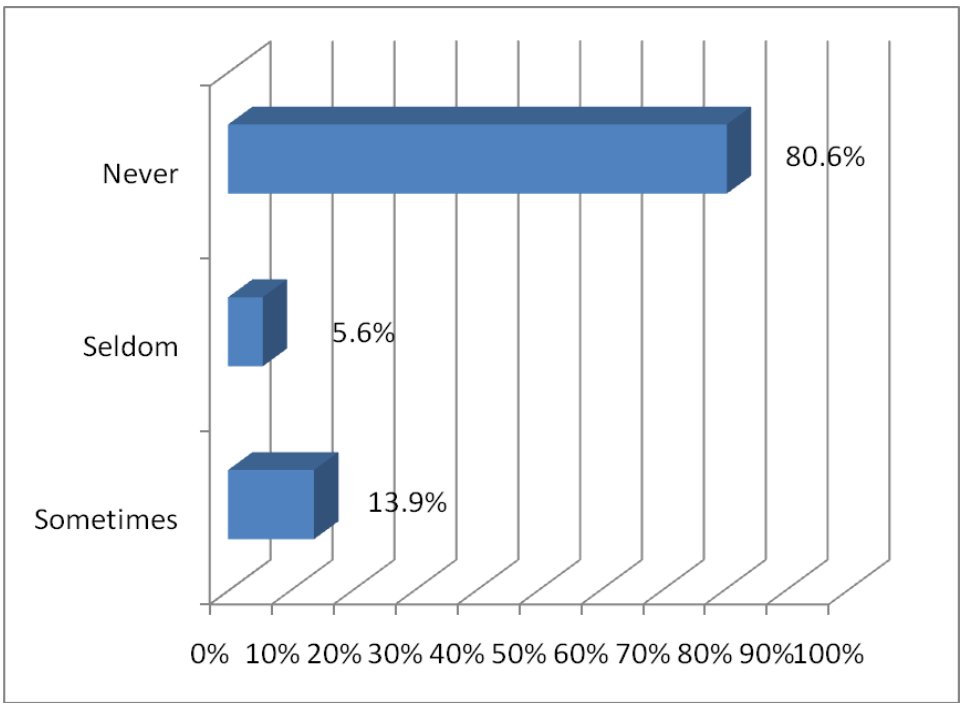


Figure 4.17: Used TV/Video clip

4.20 Teachers (N=159) Technology Knowledge and Skills

It appears from Table 16, data revealed that almost all teachers (91.80%) were very comfortable in composing, sending and receiving e-mail and few teachers (6.90%) were comfortable but very few numbers of teachers (1.90%) were not at all comfortable in doing so.

Table 16: Teachers comfort zone with technology skills

Activities	Very Comfortable		Comfortable		Not at all Comfortable		Total	
	N	%	N	%	N	%	N	%
Compose, send and receive e-mail	145	91.2	11	6.9	3	1.9	159	100
Power point presentation	133	83.7	21	13.2	5	3.1	159	100
Browse and download journal & TLM	142	89.3	14	8.8	3	1.9	159	100
Download and Install software/files	136	85.6	19	11.9	4	2.5	159	100
Webpage development	2	1.3	45	28.3	112	70.4	159	100
Using e-portfolio	0	0	17	10.7	142	89.3	159	100

Source: Teachers Questionnaire

The majority teachers (83.70%) felt very comfortable doing work with power point. Some teachers (13.20%) were comfortable and the rest of teachers (3.10%) were not comfortable at all. This portion might be senior or traditional teacher. Almost they do not fell comfort in modern technology. The data also revealed (Table 16) that majority teachers (89.30%) were very comfortable doing ` Browse and download academic journal and TLM'. Few teachers (8.80%) were comfortable in browsing and downloading journal and TLM but a small number of teachers (1.90%) were not comfortable at all.

Data disclosed that more than three-quarter teachers (85.60%) felt very comfortable doing the `download and install software'. However, a small number of teachers (2.50%) were not comfortable at all. Surprisingly, data found that around three-quarter teachers (70.40%) were not comfortable at all for developing web page but more than one fourth of teachers (28.30%) were comfortable for developing web page. Very few teachers (1.30%) were very comfortable in developing web page. However, most of the teachers (89.30%) never heard of the terminology e-portfolio. Therefore, they never used e-portfolio even they have not at all comfortable using e-portfolio. Only, a very few portion (1.90%) have the skill at comfortable level using e-portfolio.

4.21 Teachers' (N=159) e-mail ID and Domain

Data (figure 4.18) showed that a very few of the university teachers (1.88%) had no e-mail ID. Those who have e-mail ID, around three fourth of the teachers (74.84%) had e-mail ID in other domain rather university domain (25.16%). There were five categories domain used by the university teachers. These were: yahoo.com (35.85%), gmail.com (35.23%), hotmail.com (1.25%) and american.com (0.63%).

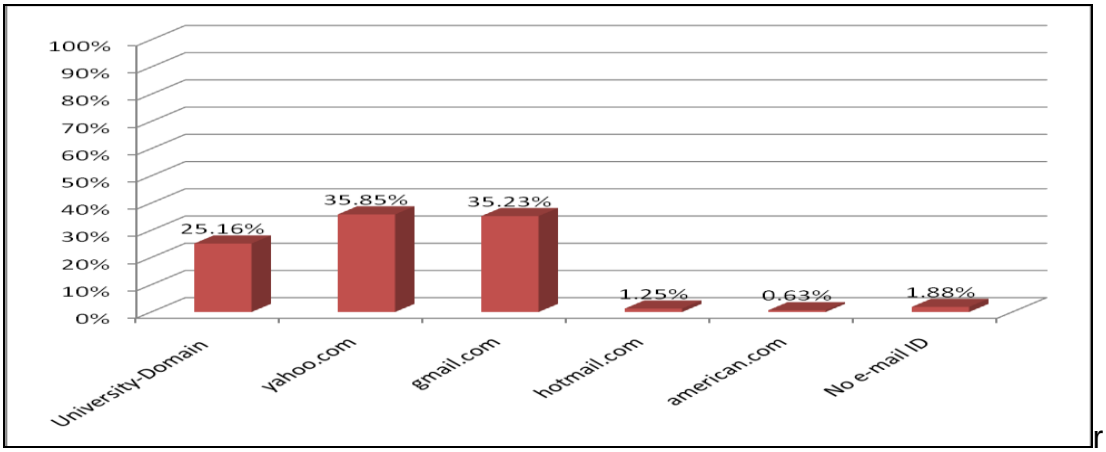


Figure 4.18: Teachers available e-mail ID and domain

4.22 Teachers e-mail ID: University wise Analysis

The data (Table 17) revealed that almost all teachers (98.08%) of Dhaka University had e-mail ID. It referred that they accessed in internet for their needs. On the other hand, a small number of teachers (1.92%) had no e-mail ID. Those who had e-mail ID, more than third fourth teachers (80.77%) of Dhaka University had e-mail ID in other domain rather university self-domain (17.31%). There were five categories domain used by the Dhaka University teachers. These were: self domain (du.ac.bd), yahoo.com (38.46%), gmail.com (36.54%), hotmail.com (3.85%) and american.com (1.92%).

Table 17: e-mail ID of different universities teachers

Name of University	Self Domain		yahoo/gmail/hotmail		No e-mail ID		Total	
	N	%	N	%	N	%	N	%
University of Dhaka	9	17.31	42	80.77	1	1.92	52	100
Jahangirnagar University	4	16.67	19	79.16	1	4.17	24	100
Rajshahi University	12	30.00	27	67.50	1	2.50	40	100
Khulna University	4	34.38	7	65.62	0	0	11	100
Chittagong University	11	34.38	21	65.62	0	0	32	100
Total	40	25.16	116	72.96	3	1.88	159	100

Source: Teachers' Questionnaire

Data (Table 17) exposed that almost all teachers (95.83%) of Jahangirnagar University had e-mail ID. However, a small number of teachers (4.17%) had no e-mail ID. More than third fourth of the teachers (79.16 %) of Jahangirnagar University had e-mail ID in other domain rather university self domain (16.67%). Data have exposed that one third (33.33%) teachers have

made use of yahoo.com and around half portion (45.83%) teachers used Gmail domain.

Data also disclosed that almost all teachers (97.50%) of Rajshahi University had e-mail ID. However, a small number of teachers (2.50%) had no e-mail ID. More than two third teachers (67.50 %) of Rajshahi University had e-mail ID in other domain rather university self domain (30.00%). Data exposed that more than one third teachers (37.50%) used to use yahoo and almost one third teachers (30.00%) used Gmail domain.

Data (Table 17) explored that all teachers (100.00%) of Khulna University had e-mail ID. Around two third teachers' (65.62%) of Khulna University had e-mail ID in other domain rather university self domain (34.38%). However, one third teachers (37.50%) used to use yahoo and rest of teachers (28.12%) used Gmail domain.

4.23 Teachers Attitude towards ICT Based PDP

The study data revealed that almost all teachers (84.28%) had interest in PDP through ICT tools. Still there had risk factor as their knowledge and skills were not at the practicing level. Thus, it might be way out that the teachers could receive foundation training on ICT skills first. Then the change agent could implement the ICT based PDP program in the universities in Bangladesh.

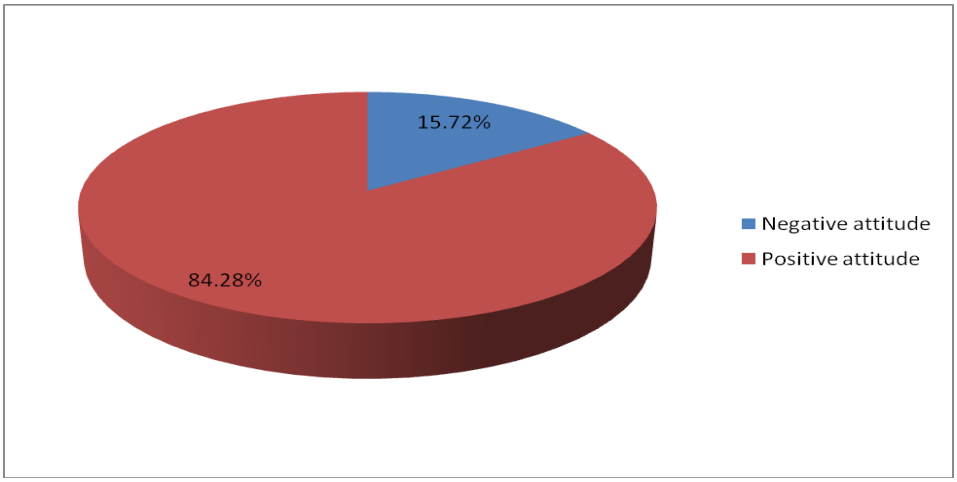


Figure 4.19: Teachers' attitude toward ICT based PDP

Hence, the qualitative data also explored the situation further. One of the male students expected that,

> *'Teacher should be more creative through proper foundation and refresher training with ICT. Our curriculum has been updated but teacher are not updated as our requirement with technology as far as I believe.' (FSRUM5)*

Interestingly, an honorable Vice Chancellor mentioned that,

> *'All the teachers are not skill enough to integrate technology with teaching. Technology integration in teaching learning is now an important phenomenon for university teacher in Bangladesh'. (IVCCU)*

4.24 Teachers' Interest to Gain from PDP

The data shows in Table 18 demonstrated the interest of teachers towards professional development simultaneously on content, pedagogy and technology. Almost all teachers have interest in learning as professional development on content knowledge (83.00%), teaching learning strategies, strategies for developing and managing classroom and assessment techniques (around 100%) as pedagogy knowledge and finally strategies teaching with technology (almost all 96.90% teachers).

Table 18: Teachers interest to content, pedagogy & technology knowledge

Activities	Interested	
	N	%
Strategies for implementing curriculum	155	97.50
Increased content knowledge	132	83.00
Teaching learning strategies	157	99.00
Strategies for developing curriculum	154	97.00
Learning assessment strategies	151	95.00
Strategies for teaching with technology	153	96.90
Peer/group collaboration (digital)	151	95.60

The next chapter followed by discussion on the data and findings. In the discussion, the researcher's personal experience and views has been added with the findings of the study.

CHAPTER 5

DISCUSSION

5.1 Prologue

This chapter presents and discusses the current study findings with special reference to other researcher's work in the field.

The discussion is organized under the following main findings of the study. These are: (1) Current status of university teacher professional development (2) Existing pedagogical practices in university (3) Situation and needs of technological skills of university teachers (4) Program model of PDP for university teachers and (5) Personal reflection.

5.2 Current Status of University Teachers' Professional Development

Organizations must accommodate change based on institutional expectations in order to survive. In a university, teacher professional development is required to address students learning goals and needs as 21st century citizens. Wei et al. (2009) define effective professional development as development that leads to improve knowledge and instruction by the teachers and improve student learning. The study findings indicated in chapter 4 that there was limited scope of professional development for the university teachers. Actually, as an internal researcher, the researcher's experiences also support the view. The researcher have been working in the Dhaka University for last 14 years, his working institute authority never arrange a single professional development course for its faculties. He did not get

existence of that kind of initiative in his working university through reviewed documents or experiences. The study has identified that there were some professional development activities in universities as workshops, seminars on the specific issue but mostly project based one shot day long discussion session. The findings have also revealed that most of the universities have no formal scopes for professional development initiatives though the teachers desire strongly. The university students expect more skilled and quality teaching by teachers and higher authority also strongly supportive to enhance the scopes of professional development though constraint exist. The findings further pointed out professional development implementation as difficult because of the traditional existing structure of teaching and learning and challenging factors in the universities. However, most of the university teachers have felt for integrating teacher professional development programs in the universities. Only a few numbers of teachers did not feel these courses. This ratio might be the senior teachers in the universities because of their traditional teaching approaches and mentality for not coping with new changes. Whatever, the existing professional development programs are not enough for the teaching quality improvement in universities. The informal approach for teacher professional development is practicing in a very small scale for the university teachers in the country. As mentioned before, it is usually existed as project based one shot workshop, seminar and discussion.

Furthermore, the study indicated that university teachers had no pedagogic or teachers training experience. It is a reminder of Elton's (1998) warning that it is inevitable that examples of excellent teaching are likely to be extremely rare with a largely untrained profession. Not surprisingly, he concludes that a

trained teaching profession is a prerequisite for teaching excellence. However, continuing professional development for teachers through training is the key way to enhance and assure the quality of teaching, learning and assessment at university. As a typical university, academic staffs are appointed substantially on the basis of academic results. Invariably, an individual who publishes more and has research experience receives greater reward. As a result, most academics see their job as a vocation focusing on research and they are inadequately prepared to be teachers. Under these circumstances institutions need to have a greater concern for effective teaching. Thus it is determined in this study that the teachers need a pedagogic training program to enhance their ability to teach more effectively. Quantitative data has explored that a huge number of teacher are out of these professional degree. So the total number of professional degree' scenario have not satisfactory all over the country.

Therefore, all the teachers have expected that university authority should organize PDP courses for their development. They have emphasized to arrange the professional development and pedagogical program to develop their skill. In addition, qualitative data has supported that necessity of professional development is an emerging issue to ensure the effective teaching learning activities in university. Effective professional development gives teachers opportunities to develop both their content, pedagogical content knowledge and technological integration into their practice. It is a lifelong process, connected to other activities of the working system and should be continuously under evaluation.

5.3 Existing Pedagogical Practices in University

Pedagogy is a scientific discipline with its own philosophical and scientific orientations borne between the 18th and 20th centuries. It includes the study of being a teacher or the process of teaching, strategies of instruction or style of instruction. It might be considered as the art and science of teaching children, or the theory and practice of education. Pedagogy can also refer to the relationship between the teacher and the student. Conceptually, pedagogy refers to children and andragogy (the art and science of helping adults learn) refers teaching in higher education. However, andragogy used critical pedagogy as the method of teaching adults. If pedagogy is considered as focusing on transmitting content in a teacher-controlled environment and andragogy on facilitating the acquisition of and critical thinking about content and application in real life then both are relevant to higher education. Therefore, pedagogical knowledge is according to Shulman (1987) the specialized didactic knowledge of the teacher, which illuminates the connection between subject matter and classroom know-how.

It is alarming from data in chapter 4 that all the teachers appointed in the university just after completion of their Master degree and they were teaching year after year without any pedagogic degree even receiving short term training course on pedagogy. There are various kinds of teachers in the university. They also come to the teaching profession in universities politically or means otherwise which has hampered the selection procedure as a whole.

However, the university teachers should have pedagogical knowledge and skill which refers to teachers' deep knowledge about the processes and practices or methods of teaching and learning. They encompass, among other things, overall educational purposes, values, and aims. This generic form of knowledge applies to understanding how students learn, general classroom management skills, lesson planning, and student assessment and more than that in practice. The study findings referred (Chapter 4) that the university teachers had limited skill on pedagogical practices in classroom. It also revealed that most of the teachers entered into the classroom in late. Furthermore, most of the time, the teachers, did not notify to the students whereas they would take the class or not. They got busy otherwise with teaching in other private universities or consultancy works. It reflected that the professional commitment of university teachers affect on their pedagogical practices. But, the existing situation desire change, for instance, the tightly coupled (Greenwood and Hinings,1996) circumstances exist in the universities where the resistance to change will be strongest. It is because the network of mutual dependencies (teachers, students, higher authority) is tightly coupled. In this point, Greenwood and Hinings (1996) claim that radical change in tightly coupled fields will be unusual, but if it does occur it will be revolutionary. However, in loosely coupled fields radical change will be more common and will tend to be evolutionary. In tightly coupled field, a change in one component (teachers professional commitment) automatically means changes in others (students learning) and loosely coupled refers to an approach to reducing the risk (pedagogical practice) that changes within one

component (teachers skill) will create unanticipated changes within other components (students learning).

The study findings have reflected in chapter 4 that large group (110 to more than 150 students) teaching is very common at the university. It is more difficult to deal with large groups than small size classes in teaching as classroom teachers. For instance, McGee (1991, p. 6) argues that the large class 'offers special problems that the normal class does not, and perhaps special opportunities as well, but also demands special procedures and preparation.' Gibbs and Jenkins (1992, p. 16) also identified that '…the effects of increased class size and students numbers are complex and contextual. But what is certain is that many staff experience it as a major problem and one which they see as severely affecting their ability to teach effectively.' It might be helpful to provide teachers with some skills on dealing effectively with large group teaching. Beginner-teachers, in particular, need much support and reassurance to help them gain confidence through their early experiences of classroom life, as well as useful advice on how to make teaching maximally effective to enhance the quality of learning. The student to teacher ratio is comparatively high in the classroom and this is an important consideration in relation to pedagogic practices. For instance, if the student to teacher ratio is high then it is probable that the effectiveness of teaching will be low. This study appears to indicate that the appointed teachers need to learn some effective skills on 'how to deal with large group in classroom teaching'. Large group teaching is common in over populated, developing

countries like Bangladesh. So it has important to identify the issue of class size in this study.

The research findings have indicated that large group teaching has not an effective way of teaching and that it has difficulty in terms of classroom management and quality learning for the learner. Most of the teachers strongly expressed their view that large group teaching was not an appropriate way of effective learning, at the same time, they supported the view that it requires teachers' effective communication skills. It indicated that the teachers need training on how to communicate with the learner effectively in a large size class. Finally, the findings showed that almost all the teachers felt that the teacher-centered approach used in large group teaching did not reflect quality teaching-learning activity. Both the teacher-centered approach and large classes are detrimental to for effective student learning. Students should learn to think in a more holistic, inquisitive and individualized manner. It indicated that the central characteristic of higher education was very large class sizes. At this point, researcher would like to point-out, Gibbs and Jenkins (1992) who argued that quality itself is an elusive concept though it is now central to much of the public discussion of higher education of many countries. If quality is an elusive concept so is hard evidence as to the impact of class size on the quality of education. Though this issue has been extensively researched most of this research has been conducted within the primary and secondary sectors of education. An analysis of such studies by Smith and Glass (1980, p. 419) concluded that there was: 'a substantial relationship between class size and teacher and pupils' attitudes… (and that)

smaller classes are associated with greater attempts to individualize instruction and better classroom climate'. Feldman (1984) carried out a comprehensive study of the impact of class size and college students' evaluation of their teachers. He concluded that as class size increases, ratings of the course and the instructor declined slightly, and ratings of interactions and relationships between teachers and students declined dramatically. McKeachie (1986) also investigated the impact of size of class at college level and concluded that smaller classes were associated with critical thinking and were more popular with students. The study by Lindsay and Paton-Saltzberg (1987) confirmed the hypothesis that there is a clear indication of the negative impact of increased class size on 'quality'.

However, researcher has argued that the existing teaching practice is not the only way to teach large groups. It may be possible to combine the use of the 'lecture method' with other effective teaching strategies when teaching large classes. Coping with large classes involves different teaching and learning methods. He also believes that it can be educationally desirable to invest in efforts to develop students' autonomy by promoting independent learning skills, (not the teacher-centered approach), as quickly as possible in higher education courses. He would argue that students can learn independently surprisingly well if they understand where they are supposed to be going and what is on offer to help them to get there. He would also argue that the lecture method and teacher-centered approaches to teaching are only efficient as a means of transmitting knowledge. It should be recognized that the objective of teaching-learning in higher education is not only about transmitting

information and knowledge. Harvey and Knight (1996) argue that university education should support the development of deep approaches to learning among the students. Researcher believes that it is simply not possible to retain acceptable quality with conventional lecturing and teacher-centered methods. The conventional pattern of lecturing in teaching and learning is no longer viable at higher education. The reason is, higher level educational goals which involves understanding, the application and evaluation of ideas, and so on, and which go beyond recall and description, cannot be easily achieved when students are largely passive, as they are during a conventional lecture (see Bligh, 2002, Gibbs, 1982 and McKeachie, 1986 for summaries and discussion of the research evidence on the lecture method). The data indicated that most of the teachers were habituated in teaching by traditional lecture method and the teacher-centered approach had been seen as highly comfortable to teach large size of classes. Thus the above findings pointed toward the notion that the teachers have training needs at cognitive and motivational level with pedagogical and technological knowledge and skills.

Thus, it was identified that most of the teachers have limited knowledge and skills on teaching strategies. There are many teaching strategies described in the pedagogic literature and researcher has examined the application of the most common or popular in this section of questionnaire. However, teachers can use some strategies within other strategies, for instance small group work within a lecture. He believes that some strategies appear to be more effective with certain students in certain situations. Students might appreciate variation

and would tire of the same few strategies. The teachers' task is to become adept at using as many strategies as they can and to choose the most appropriate ones for each group they teach. In order to make a choice of teaching strategy it is important that the teachers are familiar with each, and where they might best be used.

The teachers have acknowledged the important role the 'Blackboard' service contributes towards teaching and learning, however, the structure and design of the service did not actively encourage students in knowledge construction that reflects their understanding, comprehension and conception of information in social science education. The participants have seemed to use the Blackboard at operating dissatisfactory level.As teaching-learning materials WB/BB is used frequently in the classroom. The teachers have believed that Blackboard as a technology tool goes a long way to simplifying teaching and making teaching available to students and teachers, and in essence has transformed teaching and learning in the institution. At the same time, integration of digital technology in teaching and learning have exist very limited in university classroom in Bangladesh which showed that students are not challenged or motivated to engage with these resources and to share knowledge.

This might show their traditional views on teaching and the fact that they might not expect to be involved in student oriented teaching. A pedagogic training program could help them to get psychological and scientific ideas on pedagogical issues. The research has argued that teachers should see their

role as facilitators of transformational learning. Good teaching involves: integrating three aspects of competence effectively; namely, interactive teaching practice, disciplinary knowledge and two-way communication (student-teacher). This should be supported, from the departmental and institutional side within the context of establishing a range of learning goals which is supported through policy, strategy and resources, e.g. through co-operative peer learning both among students and (academic staff) teachers, and a study of assessment and instructional methods (Haworth and Conrad, 1997). Overall, the list of teaching-learning strategies within the questionnaire provides teachers with an indication of 'student-centred' approaches. Thus it indicates that teaching is not about transferring the teacher's understanding of a phenomenon to the student, but rather it is about assisting the students to develop their own way of seeing the phenomenon. The research has also realized that self evaluation plays an important role in improving the quality of teaching and learning of teachers or teacher evaluation by the students might help to increase teachers' quality of pedagogical activities. This evaluation should focus on the quality of teaching and learning and how to improve the various aspects which influence the quality of university. A self-evaluation diary would be useful to enable teachers to reflect on their own practice and to use assessment data to help improve the effectiveness of their teaching. Therefore, the researcher has argued that the teachers need to acquire knowledge and skills to evaluate their own performance and students' learning and the study confirmed that the assessment by the students is absent in the university level in the country.

5.4 Technological Readiness and Teachers' Skill

Within the educational developments, information and communications technology (ICT) brings a new set of challenges and pressures. There is a global trend in both educational policy and research to recognize the need to reform education from traditional paradigms of teaching and learning into more innovative forms of pedagogical practice. These areas of practice and change are often described with concepts such as information or knowledge society, emerging pedagogy and 21st century skills (Ottestad, 2010). The demand for higher education has accelerated worldwide. Governments and universities are looking for innovative ways to increase access to higher education and improve the quality of their programs and courses in a bid to improve their competitiveness. Teachers have strong ground to use of technologies such as Net world devices, digital resources and electronic environments for the 21st century skills, like constructing knowledge, creativity, innovation, critical thinking, problem solving, learning to learn, meta cognition, collaborative learning and skills development by students, through facilitating with ICTs. In chapter 4, the study has presented the data related to technological readiness and situation of university teachers' technological skills.

Findings reflected that the ICT infrastructure (computer, internet, multimedia, smart board etc.) including alternative power supply needs to install in all classrooms otherwise it is not possible to integrate ICT tools properly in teaching learning in the university. However, literature attests to the power ICT can have in teaching and learning processes (Fonkoua, 2006; Newhouse,

2002). It has been suggested that using technology well in classrooms can even prepare students to be more effective citizens (John & Sutherland, 2004) in increasingly open and democratic societies. Research in developing countries like Bangladesh shows that, ICT for teaching and learning in university environments can contribute to developing a more student-centered approach to pedagogy (ROCARE, 2006). Once again, this reflects the fact that the equipment such as; OHP, Video/TV/Tape recorder might be unavailable in higher education. Even low cost teaching aids could be applied more effectively for enhancing the quality of teaching but training is needed to help teachers to achieve the skills for developing low cost teaching aids. ICT linked TLM are contributing significantly on the content of education curricula stems from the ways in which TLM are dominating so much of contemporary life and work. Already there has emerged a need for educational institutions to ensure that graduates are able to display appropriate levels of information literacy, 'the capacity to identify and issue and then to identify, locate and evaluate relevant information in order to engage with it or to solve a problem arising from it' (McCausland, Wache & Berk, 1999).

Research on ICT in education reveals that although teachers are gradually starting to integrate ICT into their teaching strategies, significant differences are observed in the way ICT is integrated in the classroom (e.g. Tondeur *et al*. 2008b). Some teachers are intrinsically motivated to use ICT in educational practice, while others do not share this affinity. For this reason, many researchers have centered on critical teacher-related characteristics associated with educational ICT use such as their 'computer experience'

(Bovée *et al*. 2007), their 'innovativeness' (van Braak *et al*. 2004) and their personal 'beliefs about education' (Ertmer 2005). Teachers with pedagogical proficiency who are ready and willing to transmit knowledge and support students to construct knowledge will normally make a difference in any learning process. In this age of ICT and its integration in the educational system, the role of the teacher, just like in the traditional classroom environment, should not be overlooked or underestimated (Boakye and Banini, 2008). Now a day education is equipped with modern technology.

The findings indicated that most of the university teachers were comfortable with working on composing, PowerPoint presentation, browsing and communication through e-mail rather using e-portfolio, online board, creating web pages. Unavailable of self domain e-mail Information Domain (ID) of the teachers of universities could refers that they have possessed minimal of ICT literacy and it might claim of using insecure technology in their daily life. The data findings have revealed that the scenario of Chittagong and Khulna University are same. Here all teacher (100.00%) of Chittagong University have e-mail ID. Around two third teachers' of Chittagong University (65.62%) have e-mail ID in other domain rather university domain (34.38%). Data have exposed that more than one third (37.50%) teachers have made use of yahoo.com and rest of the browser (28.12%) teacher used Gmail domain. The finding corroborates that of Hennessy, et al., (2013), that new technologies initiate 'pedagogical evolution' in those teachers and students who embrace it. At the same time, on the other hand, some students are taken up by technology, and claim technology provides a flexible learning environment,

while others do not. As mentioned in chapter 4, some students have little knowledge and education on the facility and, as a matter of fact, do not understand how the system operates. Can it be true that they were trained on how to engage with the service and were informed of its potential benefits? This issue needs attention.

Thus, the data has indicated that most of the university teachers have less knowledge and skill for integrating technology in teaching profession. Therefore, it could be summarized that teachers have lagged behind of digital environment. All of them are interested to develop themselves on content, pedagogy and technology as the 21st century skills. Therefore, it has driven by globalization and pressures to teach and train knowledgeable, skilled and competitive professionals, universities face a huge challenge in increasing access to higher education and improving the quality of higher education against the blunt reality of decreasing resources. Fundamental to the creation of qualified human resources is an accessible, effective and efficient higher education system, particularly when governments are counting on university graduates to be competitive in creating wealth for their country. Universities are therefore compelled to be innovative and lead by using cutting-edge technology to meet these expectations. The challenge Bangladesh faces is how to become a learning society and to ensure that its citizens are equipped with the knowledge, skills and qualifications on information and communication technology (ICT), they will need in the next century. ICT revolution imposes particular challenges on education systems in Bangladesh.

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5.5 Program Model of PDP for University Teachers

In university, the pedagogy of classroom is often even more constrained because of the requirements to cover many degree topics, teach large student cohorts, meet strict deadlines and for university teachers to keep up with their research as well as teaching load and commitments (e.g. Cox and Lewis, 1978, Laurillard, 1993, Reynolds et al., 2007). Usually, new faculty members, often patter (or try to pattern) their first teaching experiences based on former professor's teaching methods, with the goal to be an effective teacher and respected and liked by their student (Cornwell & Salam, 2009). Many

universities either had or have established centers to support faculty in their teaching endeavors. The findings in chapter 4 of this study confirmed that there is no institute or center to support faculty in their teaching in the university in Bangladesh. The movement toward a focus on teaching and learning excellence has led many institutes to value teaching quality with research and reviewing faculty profile for promotion, tenure, and merit pay. Additionally, accreditation of higher education institutions has increasingly reflected external pressures for accountability of student learning through teachers' pedagogical practices. Thus, pedagogy in higher education refers as a complex and not easily defined phenomenon. However, Watkins and Mortimer (1999) define it simply as 'any conscious activity by one person designed to enhance the learning of another' (p.3).

The findings in chapter 4 indicated that most of the university teachers desired strongly that university authority should organize PDP courses to improve their teaching capacity. The study findings further confirmed that almost all teachers strongly agreed on the necessity of PDP courses for the university teachers' in Bangladesh. In addition, qualitative data supported the necessity of PDP as an emerging issue to ensure the effective teaching learning activities in universities. Hence, continuous professional development (CPD) initiative through a structured approach to learning helps ensure competence of university teachers' in practice. CPD helps in the construction and adaptation of mutually shared networks of theory and practice. There CPD models could be a concern for implementation. However, it identifies three main categories of CPD models including, transmission, transformation and

transition. According to Kennedy (2007), transmission is composed of three sub-models; namely 'training', 'award-bearing' and 'deficit' models. The 'training model' is when teachers are provided with opportunity to update their skills in order to be able to demonstrate their competence, while the 'award-bearing model' emphasizes the completion of award-bearing programs of study – usually, but not exclusively, validated by universities. The 'deficit model' is usually designed to address a perceived deficit in teacher performance. The second main category is transformation, which includes 'action research' in which teachers themselves are learners and researchers, with a view to improving the quality of action within it. The transformative model combines practice and experience sharing. The 'quality of action' can be perceived as the teachers' understanding and interpretation of the situation, as well as the practice within the situation. This model considers teachers as being empowered to use the pedagogical spaces in more situated ways.

The third model is transitional, which combines 'coaching/mentoring', 'community of practice' and 'standard models'. In 'coaching/mentoring' emphasis is on a one-to-one relationship, usually between two teachers, (one novice and a senior), which is designed to support CPD. 'Community of practice' involves more than two teachers. Learning involves mutual engagement, understanding and tuning teachers' enterprise and developing repertoire, styles and discourses. Learning within a 'community of practice' happens as a result of that community and its interactions, and not merely as a result of planned learning episodes such as programmed courses of study.

The cascade model (not categorised among the three) involves individual teachers attending 'training events' and then cascading or disseminating the information to colleagues. Commonly employed in situations where resources are limited, the cascade model can be used to strengthen the three main models.

The CPD model adopted is dependent on the purpose. If the aim is preparing teachers to implement reforms then transmission models are preferred. For supporting teachers to contribute to and shape educational policies, one should adopt the transformative model. Transitional models can be used to support the first two models. These models provided a lens through which the University pedagogical program might be evaluated. however, Teachers should have scopes for professional development both within formal professional development settings such as courses and in-service days and informal settings such as common planning and discussion of lessons, self-reflection and reading of professional journals (Borko, 2004; Desimone, 2009; Wei, Darling- Hammond, Andree, Richardson, & Orphanos, 2009).

5.6 Personal Reflection

The researcher's passion to investigate the professional development and pedagogy (PDP) of university teachers began in 1999 when the researcher was a student at the Institute of Education and Research (IER), University of Dhaka. Participating in the classroom as a student of Education, the researcher observed the pedagogical practices of university teachers which were not being considered as the quality academic benefit of the students

prompted the researcher to think of possible factors that might contribute to teachers' inability to engage with professional commitment. The researcher's' interest was overwhelming in 2006 when, he did his MA Education dissertation in the UK (after joining at IER in 2003 as a lecturer), intended to study a case on 'need of a pedagogic training program for new lecturers at Dhaka university'. Secondly, attending 'The 4th Dean's Forum Scaling Up of the Next Generation of Teachers' conference in 2009 Bangkok, Thailand, which pointed out the poor state of ICT integration in universities, inspired the researcher to attempt to make a difference.

Five years ago, the researcher took the initiative to get on on this study and explore university teachers' related issues for professional development scopes, pedagogical practices with the necessary technology skills to integrate them into teaching and learning. The researcher got a lecturing position in one of the university institutes involved in teacher education and training, and had the opportunity to engage, with practicing teachers, on the issue, as well as observing first-hand the nature of teacher education and teacher training programs. It was clear that the limited scope of PDP of prospective university teachers with ICT skills lay in their pre-service and in-service environment.

This five year journey saw the researcher drawn closer to the practice of university teachers involved in education and social science teaching in university, and to acknowledge the effort they make to develop their professional and pedagogical excellence integrating technology in their

practice. However, much has to be done if student teachers are to meet the needs of the 21st century digital environment. Students appear to be fast incorporating ICT into their learning process, and demanding that teachers do more to close the pedagogical and digital gap. Though the current professional and pedagogical development is largely within the traditional paradigm, to effectively use technology, pedagogical reorientation has to take place. Regular courses on professional development programs would help address this issue and thus rescue the situation.

This journey has been long and tiring, but the researcher is proud to say that there was a qualified supervisor who continually provided encouragement whenever things got tough. The experience gained in conducting both quantitative and qualitative research and in-depth analysis of data will be transferred to other future researchers.

The implementation of PDP and integration of ICT into teaching and learning is not as simple as it sounds, but is a multi-complex domain which requires cooperation from all stakeholders in university education. With the right people and the correct orientation, the full potential of this amazing initiative could be used to transform education and produce students who will be ready for the demands of knowledge based society.

CHAPTER 6

MAJOR FINDINGS, RECOMMENDATIONs AND CONCLUSION

6.1 Prologue

From the analysis and findings in chapter 4, the study has identified the needs of university teacher regarding professional development, pedagogy practices and technology integration in teaching. Thus, the findings reflect that there is a need for change to improve the quality of teaching-learning activities at the universities. However, it may also be argued that it is essential to improve quality of teaching in universities. As Tierney (1999) has indicated universities of the twenty-first century will face both scarce resources and a requirement to set high quality and goals. This chapter presents the major findings, discusses the recommendation and conclusions of the study.

6.2 Major Findings

- It was found that there were very limited scopes of professional development for university teachers in Bangladesh. Whatever, the existing professional development programs were not enough for quality improvement for the teachers in universities in Bangladesh. The informal approach for professional development was practicing in a very small scale for the university teachers in the country. It was usually existed as project based workshop, seminar and/or discussion. Most of the respondent (82.40%) claimed that the scopes of PDP were not available in the universities. Data revealed that Jahangirnagar and Khulna University had no PDP scope (100%) at all. Almost, the same

situations were reflected in other universities e.g. Chittagong (88%) and Rajshahi University (90%). However, most of the teachers (96.20%) desired strongly that university authority should organize PDP courses to improve their teaching capacity but all the teachers of Dhaka, Jahangirnagar and Khulna universities (100%) expected that the university authority should organize PDP courses for their own development. Thus, the study confirmed that almost all teachers (99.30%) strongly agreed on the necessity of PDP for the university teachers' in Bangladesh. In addition, qualitative data supported the necessity of PDP as an emerging issue to ensure the effective teaching learning activities in universities.

- The study found that most of the university teachers (61.64%) highest hold MSS degree. One fourth of university teachers (26.41%) awarded with PhD degree. However, it also found that all the newly appointed teachers fulfilled the requirement of appointment with a post-graduate degree in their respective field and most (92.45%) of the teachers had no pedagogic or teachers training experience in education. Whatever the degree, the teachers (85.30%) accomplished their degree with individual initiative. It is a reminder of Elton's (1998) warning that it is inevitable that examples of excellent teaching are likely to be extremely rare with a largely untrained profession. Not surprisingly, he concludes that a trained teaching profession is a prerequisite for teaching excellence.

- It was found through classroom observations that the teachers had sound content knowledge though they could not able to explain with example, assimilate the content with practical experience rather theoretical. It was also found that majority of teachers used textbooks in the classroom teaching as teaching learning materials.

- The study found that most of the teachers (93.70%) dealt with large size classroom with huge number of students. It was reflected through classroom observation that at large group teaching is very common at the universities. It is more difficult to deal with large groups than small size classes in teaching as classroom teachers. For instance, McGee (1991, p. 6) argues that the large class 'offers special problems that the normal class does not, and perhaps special opportunities as well, but also demands special procedures and preparation.' More than one third of teachers had the student number in class from 70 to 150.

- It was found through class observation that three fourth classrooms had sufficient air and light or proper ventilation system. According to a great majority of teachers (91.7%), there was adequate furniture in classroom in terms of student numbers though classroom was not suitable for the altering seating positions. Similarly, more than half teachers (52.80%) argued that classroom space was not suitable for teachers' movement. The qualitative data expressed that the teachers were not friendly in their teaching. All teachers of a university opined that they had inadequate teaching learning materials in classrooms.

- The large number of teachers (63.90%) `never' delivered handouts for the students in the classroom. Surprisingly, it was found that most of the teachers (72.20%) entered the class in late. It indicated that most of the university teacher did not maintain the professional commitment for conducting their class in time. In this regard, a Pro-Vice Chancellor suggested incorporating ICT system for controlling of the classroom conduction time by the teachers. Furthermore, more than half of the classes (55.60%) held for 40 to 45 minutes and the rest of classes conducted for 50 minutes.

- Small number of (13.90%) teachers was used to use Teaching Learning Materials (TLM) in the classroom. Around half teachers (44.4%) did not use whiteboard/Backboard in classroom teaching learning. However, a huge number of teachers (83.30%) had loud voice for students understanding.

- It was found that more than three-quarter of teachers (83.30%) always used 'lecture' method in classroom teaching. Around half of the teachers (44.40%) never used participatory approach in the classroom. Majority of university teachers never used group discussion and pair work strategy in their teaching learning in classroom. However, one fifth of the teachers (16.70%) used always 'question-answer (Socratic approach)' in the classroom for their teaching learning approach. The findings indicated that almost all of the teachers had conventional ideas about lesson planning. The teachers showed the traditional views on teaching and the fact that they might not expect to be involved in

student oriented teaching. However, the qualitative data also found that the classroom environment and pedagogical practices of teachers were not enjoyable.

- It was found that the teachers had positive attitude towards student-centered classroom teaching, self evaluation of teacher for improving teaching quality and 'teachers' evaluation by the students for improving their profession. Though their classroom practice did not reflect the same.

- More than two third of the teachers (69.40%) always used Bangla language in the classroom. On the contrary, a small proportion of teachers (11.10%) always used English as classroom language in the classroom. Though the students expected that teacher should use English language most of the time in the classroom so that the students can be encouraged to speak in English.

- The study found the evident that the teacher usually did not assess their teaching lesson after the session. It was proved that the university teacher used to use traditional assessment system mostly in their departmental examination. It was also found that written and oral test were common evaluation system in all universities (100%) mostly through essay type items. However, some of the teachers (12.60%) used MCQ items in some universities. On the contrary, the students expected to introduce scientific and logical assessment system creatively by the teachers in the university.

- Power supply need to be available in all classrooms for integrating ICT in pedagogy practices. Unfortunately, it was found that most of the classrooms (86.1%) had no alternative power supply. There had no (100%) SMART board in classrooms in the universities of Bangladesh. Most of the (75%) classrooms had no multimedia though it needs to be ensured in all classrooms in the university. Data also found that most of the classrooms (83.3%) had no computer for teachers' use in teaching and learning. Surprisingly, the findings further demonstrated that more than half (58.3%) of the department and institutes had no ICT labs for students and teachers. Although all the classrooms had power supply but there was no alternative power supply in almost all classrooms in universities. Qualitative findings also supported that ICT infrastructure was available in offices but it was not available in all classrooms as required. Even most of the classrooms had no internet connection for using in teaching learning.

- It was found that the majority teachers (91.80%) had computer skill limited to composing MS-word document, sending and receive e-mail and the majority teachers (83.70%) had knowledge and skill on doing slide show presentation (i.e. Power point). Similarly, most of teachers (89.30%) felt very comfortable doing browsing and download. However, most of the teachers (89.30%) never heard of the terminology e-portfolio. Therefore, they never used e-portfolio even they had no comfortable skill at all for using e-portfolio.

- Surprisingly, it was found that a very few of university teachers (1.88%) still had no e-mail ID till today. Those who had e-mail ID, around three fourth of teachers' (74.84%) had e-mail ID in other domain e.g yahoo.com, hotmail.com and gmail.com that is unauthorized. However, one fourth teachers (25.16%) had e-mail ID in university self domain.

- The study found that almost all teachers had interest to ICT based PDP. It was also found that almost all teachers had positive attitude to learning as professional development on content knowledge (83.00%), teaching learning strategies, strategies for developing and managing classroom and assessment strategies (around 100%) as pedagogy knowledge and finally strategies teaching with technology (almost all 96.90% teachers).

6.3 Recommendations

The following recommendations have been made based on the findings emerged from the study data and analysis:

6.3.1 Professional Development

- The study indicated that there is very limited scope of professional development for the university teachers. Therefore, every university should incorporate professional development program for their teachers. The central administration of each university may take necessary measures in this regard.

- The existing professional development is more or less an informal approach though it is going on in a very small scale for the university teachers. Furthermore, it is usually existed as project based one shot workshop, seminar and/or training. Therefore, it is recommended that every university and each faculty/department/institute can take initiative for implementing in-house quality PD program formally for all teachers with the approval of central administration of the university. As the data suggested that most of the teachers have desired strongly for organizing PDP courses to improve their teaching capacity.

- The study has indicated that almost all teachers have strong agreement on the necessity of professional development. In addition, necessity of professional development is an emerging issue to ensure the effective teaching learning activities in the universities. So, all the university may organize relevant professional development program for all of its teachers.

- The majority respondent belief that their teaching quality could improve through their self-evaluation process. Similarly, majority respondents (89.40%) beliefs that the assessment of teachers' teaching by the students could improve the teaching quality of the universities. But assessment of teachers by the students is absent in the university. In this regard, it is necessary to introduce both 'self-evaluation mechanism of teachers' and 'teacher evaluation protocol by the classroom students'.

6.3.2 Content Knowledge (CK)

- The study identified that around two-third (61.64%) of the university teachers hold MSS degree. Only, one fourth of the teachers (26.41%) have been awarded with PhD. So, the university teachers should be given more chance to study further in their respective field for improving content knowledge leading to Ph.D. The UGC may arrange scholarship opportunity in home and abroad for all the teachers. Thus, the content knowledge of university teachers needs to be increased considering the need, level and capacity of students.

6.3.3 Pedagogy Knowledge (PK)

- Data indicated that university teachers (92.45%) have no pedagogic or PD training or degree in education. For efficient teaching, it is necessary to have good pedagogy background of a teacher. Thus, the pedagogic training or degree in education may be mandatory for all the university teachers after or before joining in the university.

- The data also acknowledged that a great majority of the university teachers (72.20%) did not start their lesson in due time in the classroom. Therefore, an automation sign-in technology need to be implemented in the universities to ensure teachers entry into classroom and come out of classroom.

- As large group teaching is very common at the university in Bangladesh, the university authority could consider making separate sections (e.g. Section-A, Section-B) with 50 students per section.

Teaching large groups effectively is a difficult art, so the development of skills for dealing with large groups effectively is essential for the teachers.

- The data recorded that one third (25.00%) of the classrooms have still insufficient ventilation systems in the universities. So, the university authority should take necessary measures to come out of this situation. The classroom also lacks sufficient spaces for teachers' movement. This should also be considered with great concern.

- The qualitative data expressed that the teacher-student relationships are not usually friendly in teaching. This problem needs to be addressed in the in-service training systems. The teaching learning materials (TLM) have inadequate in around half of the classroom (48.40%) TLM. So, the university administration should ensure the availability of TLM in all classrooms based on the specific lesson as required by the teachers. There was also lack of lesson-based teaching aids except chalkboard/whiteboard. This issue also tells for a good training of teachers.

- It was found that many teachers do not deliver handouts to the students after completing the class. In this regard, the teachers should have the opportunity (both financial and logistic) for delivering handouts with the necessary reference materials.

- Teaching requires planned activities for creating the new generation of knowledge through lesson planning. The data indicated that almost all teachers had no conventional ideas about lesson planning. This seems to suggest that PDP training including lesson planning is needed to develop the teachers' skills.

- The teacher-centered teaching method e.g. lecturing is dominant in the classroom. It may, therefore, be logical to assume that a pedagogic training course focusing on student -centered methods is must for the university teachers.

- There is also strong need of providing pedagogical motivation through PDP program for positive change of teachers' belief and practices in the classroom.

- The medium of instructions is usually Bangla in the university classroom as indicated in the data. Thus, the university authority should think 'English' as the medium of instruction in the teaching learning and assessment process for the global context of competency of the university graduates.

- Almost all the evaluation and assessment system (89.30%) is essay type in the universities along with traditional assessment system. So, the UGC and/or university and/or department/institute should introduce the creative and global standardized assessment system for the students as global citizens.

6.3.4 Technology Knowledge (TK)

- There is lacking of ICT infrastructure in the most of the classroom in universities for effective teaching with technology. Thus, ICT infrastructure need to develop in every university including provide sufficient computer for teachers, internet facilities, provide computers in classroom with alternative power supply for teaching learning activities.

- Use of ICT based TLM by university teachers has found very poor. It was also indicated that the majority of the respondents had limited knowledge and skills (e.g. interactive digital content, web page development, e-portfolio etc.) of using technology in teaching. It needs training of university teachers on the fundamental technological skills and issues. Specifically, scope of internet access need to extend for the students and teachers in campus.

- Most of teachers never used e-portfolio and they have not at all comfortable using e-portfolio. So, a national e-portfolio is needed to develop for teachers' continuous professional development, sharing and exchange experience and skills under UGC for the universities.

- Data indicated that there is no e-mail ID still of a portion of the university teachers. Those who have e-mail ID, they have it in mostly other domain not the respective university domain. Self-domain based e-mail with 'domain control systems' service need to be introduced for the teachers in all universities.

- The study data refers that almost all the teachers are interested in PDP through ICT tools. Thus, the teachers may receive foundation training on ICT skills firstly, secondly on technology integration in teaching.

6.4 Teachers' Attitude toward PDP

- Almost all teachers have interest in professional development on content knowledge, teaching learning strategies, strategies for developing and managing classroom and assessment strategies as pedagogical knowledge and skills and strategies teaching with technology. However, the study also indicated the challenges to introduce the change through PDP training. The change agent may need to adopt transformational leadership in order to encourage teachers to adopt more student-centered approaches.

- The higher management indicated the financial limitations though it was found that they have positive views in relation to the PDP training for all teachers in universities. They indicated a number of major challenging issues e.g. scarcity of funds, convincing the senior professors to fully support the initiative, the history of failure associated with previous attempts to set up similar induction program, a lack of effective leadership of change agents in managing the uncertainty and risks associated with change. So, a change agent needs to take initiative.

- The teachers have suggested the following for the ICT based PDP for the university teachers:

-E-learning and e-training

-Professional e-portal

-Online portal for connecting with students

-Studio teaching learning system development

-National and University based e-portal web

-Skype/ face book in teaching learning

-By creating websites where teaching tips and daily lessons can be put in to be followed and practiced by teachers.

6.5 Proposed PDP Model Structure

1. Introduction In this age, it may be an emphasis on the critical need for effective professional development for teachers as a key to ensuring high-quality education in the universities. Education leaders—teachers and students—recognize, in this study, the importance of continuous professional development and pedagogy (PDP) learning for teachers in universities. Unfortunately, they often lack the support and resources to implement effective professional development in their own universities. However, the need to "scale up" these efforts is vital so that teachers, regardless of where they teach and lead, will be provided with high-quality professional learning experiences through the proposed PDP program.
2. Program Title University Teachers Professional Development and Pedagogy Program (UTPDP)
3. Category Foundation Training (May be compulsory for all teachers)
4. Nature In-service
5. Duration Three Months

6. Expected Learning Outcomes

These learning outcomes will cover pedagogical and technological knowledge and skills focusing on content. It is desirable that teachers be able to:

- critique content, materials, and teaching methods
- prepare plans, materials, and physical space
- implement and adjust plans during classroom instruction
- organize and monitor students, time, and materials during instruction
- practice curriculum targets in classroom
- evaluate student learning
- develop basic technology skills
- hands on learning on technology integration strategies in profession
- doing things differently with technology
- reflect on one's own actions and students' responses in order to improve teaching
- continue professional development and interact with colleagues

7. Objectives

Teacher professional development and pedagogy training programs will accomplish the following:

- Enrich teachers with updated content knowledge
- Empower teachers to develop their knowledge and skills actively and experientially, in a variety of learning environments, both individual and collaborative.
- Include a variety of learning strategies, encompassing direct instruction, discussion, drill and practice, deduction, induction, and sharing.
- Encourage teachers to be mentors, tutors, and guides of the students' learning process (rather than simple presenters of knowledge and information).
- Develop teachers' skills in learning how to learn (define learning objectives, plan and evaluate learning strategies, monitor progress, and adjust as needed).

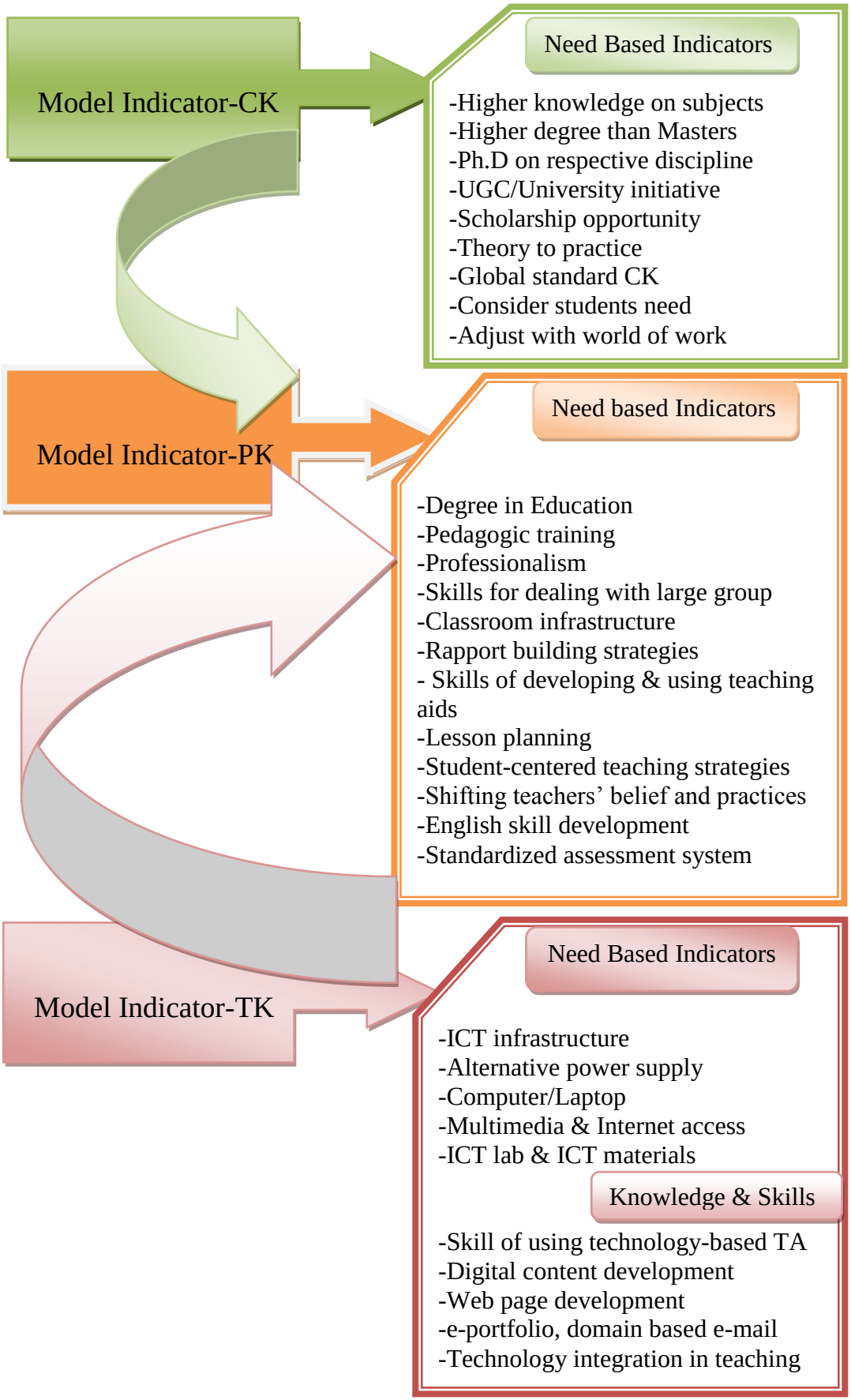
- Make a difference to the quality of teaching in their classroom practice.
- Emphasize ways that technology can facilitate and enhance teachers' professional lives.
- Promote cooperative and collaborative learning.
- Enable learning independent of time and place (anytime, anywhere learning).
- Enable teachers doing things differently with technology.

8. Principles of Proposed PDP

Based on the study, the following principles may apply to design and facilitation of all teachers learning, regardless of content area.

- Focuses on existing practices in the classroom
- Helps teachers develop knowledge and skills on pedagogy and technology integration in learning and teaching
- Focuses on core content and modeling of teaching strategies for the content
- Provides the chance for teachers to collaborate
- Builds a learning community
- Links to the university systems
- Includes follow-up and continuous feedback
- Ongoing Guidance, Monitoring, and Support

9. Model Indicators for Selecting Program Content:



10. PDP Approach

The approach may include at least three alternative dimensions:

- **Foundation/Initial training** (in-service) that provides teachers with a solid foundation of knowledge; competency in teaching, classroom management, and organization skills; mastery of the subject matter they will teach; and proficiency in using a variety of educational resources, including technology.

- **Workshops, seminars and short courses** (in-service) that offer structured opportunities for acquisition of new teaching skills and subject matter knowledge, as well as skills development in the use of technology in the classroom, that are authority-certified and linked to teachers' professional development.

- **Ongoing pedagogical and technical** support for teachers as they address their daily challenges and responsibilities.

11. Model

It can incorporate the following alternative three models as presented here, but its essence is a holistic, long-term approach to ongoing professional development that includes training, support, and career growth:

11.1 In-house (University-Based) model

This model works best when a combination of the following in-school activities are used: i) individual consultations between the teacher and the supervisor or other experts, especially with emphasis on classroom supervision; ii) observation of excellent teachers, discussion, peer coaching, and mentoring; and iii) visits to other classrooms and universities. The in-house (university-based) model is very effective for long term guided learning.

11.2 Partnerships

Other collaborative efforts for professional development include: i) institutional twinning, where a teacher training institution develops a partnership with another well established institution in either the same country, another developing nation, or a more industrialized nation to provide staff exchanges, shared training, ideas, and support; ii) partnerships between local universities and the teacher training institution to provide testing grounds for new research practices intended to maximize student learning (university professors often meet regularly in the schools to discuss practical concerns and problems of the classroom and the schools provide places for student teaching); and iii) individual collaboration of teachers or school districts with institutions of higher education to pursue mutually-beneficial projects and in-service training for teachers related to the higher education institution programs.

11.3 Online model

Online platform may use for university teacher training, sharing and exchange knowledge and skills. It is more challenging than face-to-face model in terms of ICT infrastructure and expertise in management.

12. Modality

Key to successful teacher professional development programs is a modular structure, corresponding to different levels of teacher experience and expertise. The proposed PDP module may develop based on the indicators of this study as mentioned in the content.

13. Engagement rather than Volunteering

Teacher participation may mandatory by administrative order of university authority. Initial engagement can be promoted by identifying specific issues that teachers recognized in the study.

14. Motivation and Incentives

The University Grants Commission (UGC) or respective university authority may motivate teachers for their professional development and pedagogic skill development. The participants can receive financial/incremental incentive for successful completion of the program.

15. Certification/Accreditation

The University Grants Commission may open a window for teaching quality measurement and improvement in the universities. The training program may be accredited for participants by providing a certificate through respective universities.

16. Teacher Evaluation as part of Professional Development

This evaluation may be possible in different ways and as holistic of all as follows:

16.1 Peer evaluations: It encourages collegiality among teachers and reduces job isolation. Two common types of peer evaluations are peer coaching and mentoring.

16.2 Self-evaluations: It requires teachers to collect information about their own teaching. This is a non-threatening, nonintrusive means of collecting data.

16.3 Student evaluations: It can provide useful information about instructional effectiveness and the learning environment. However, other sources of information should be used such as project work, essays, and other products in student portfolios that provide examples of what students have learned.

16.4 Teacher portfolio: Portfolio contains a variety of information about performance. Typically, they include curriculum and other materials prepared by the teacher, evaluation information gathered from others, and examples of student work.

17. Financing Source

A special allocation for teacher training may be included in annual budget of each university. The UGC and GoB can contribute necessary fund in this regard. On the contrary, each university can raise internal fund for this program initially.

18. Conclusion

Teachers need multiple opportunities to absorb new information and translate it into practice. Learning is cyclical rather than linear, so teachers need to be able to revisit partially understood ideas as they try them out in their everyday contexts. Such opportunities should involve a variety of activities that are designed to promote acquisition of the target knowledge and skills. What is more important is that activities are designed and aligned to meet the particular learning purpose. Those who plan and facilitate professional development need to support teachers as they develop the theoretical understandings and tools that will enable them to take a self-regulated, inquiry approach to their everyday practice.

6.6 Further Scope of Study

The study indicates the need for further in-depth study in terms of time, money and process. The on-going in-depth study should be focused on a 'path-finder' searching for sustainable way out on effective pedagogical strategies for university teachers, on quality teaching with technology and funding for the planned change to enhance the practice of university teachers and thereby improve the quality of university education in Bangladesh.

6.7 Conclusion

The study recommendations and specifically the proposed PDP is inertia for transformational change in the universities. In conclusion, Lewin's (1951) suggestion that successful change requires a three-step procedure that involves the stages of unfreezing, moving and refreezing could be applied to the situation at universities. He suggests that change is brought about by increasing the 'driving forces' pushing for change whilst on the other hand, diminishing the 'restraining forces' that oppose or resist change. He also argues that approaches which involve the removal of restraining forces within the individual, group or organization are likely to result in a more permanent change than approaches which involve the application of outside pressure for change. The researcher of this study believes in the view of Lindblom (1994) who points out that initiating change is often a hostile activity. Anyone who wants change has to overcome massive inertia. It signifies that change never comes overnight. The Nobel prize-winning professor Schultz (1963) raises his voice indicating that innovation and new change might take 50 years to embed in an organization or society. Researcher also refers to the most important view of Hayes (2007) in relation to change that someone needs to start from somewhere. At this point, the researcher cannot predict success in this proposed change with any certainty, but he can be confident that change is not something which necessarily comes easily. He would conclude with a statement of a former board member of a major public US university (Weinstein, 1993) who describes that changing the system is akin to 'moving a battleship with your bare hands'.

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APPENDIX-A

Professional Development and Pedagogy of University Teachers in Bangladesh: An Exploratory Study

Questionnaire for Teachers

Dear Colleague (s),
I would like your cooperation in a study entitled ***'Professional Development and Pedagogy of University Teachers in Bangladesh; An Exploratory Study'*** as of my Ph.D research in the Institute of Education and Research (IER), University of Dhaka.

The questionnaire will take you about 10 to 15 minutes to complete depending on your answers. I would be very grateful if you could participate in this study, as I am interested in your views in order to enhance the quality of our profession, learning-teaching activities and future needs in the University Education.

I would like to make you sure that your provided data will be highly confidential. It will use only for this study. Your name will also never be disclosed anyhow, anywhere.

Thank you very much in anticipation of your co-operation.

Yours sincerely,
……
(Md. Abdus Salam), *MA Education (UK)*
Associate Professor and Former Chairman
Department of Nonformal and Continuing Education
Institute of Education and Research (IER)
University of Dhaka, Bangladesh
Cell: *01711-702630*, e-mail: *abdussalam@du.ac.bd*

Section A: *Personal Information*

1) *Your Name (Please)……*

2) Department or Institute Name……

3) University Name……

4) *Designation:*☐Lecturer ☐Assistant Professor ☐Associate Professor ☐Professor

5) Your e-mail ID (if any in the University Domain or other domain): ……

6) Please indicate your educational qualifications by ticking (√) ***one or more*** of the following:

☐ BSS (Pass) ☐ BSS (Hons) ☐ MSS ☐ Bachelor of Education (Hons)

☐ BEd. ☐ M.Ed ☐ M.Phil ☐ Ph.D Others (please specify)……

7) For how many years have you been teaching in the University? (Please tick an appropriate)

☐Less than 5 years ☐Less than 10 years ☐Less than 15 years ☐more than 15 years

Signature please……..

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Section: B

8) Does your University provide any kind of Professional development and/or Pedagogic training course/program related to teaching in classroom?

Yes ☐ No ☐

If "Yes", specify the name and explain the nature of the program-

a) Professional Development ……

b) Pedagogic training …….....

9) Do you feel that the University authority should organize the following program for the teachers?

a) Professional Development program … Yes ☐ No ☐

b) Pedagogic Training course … … Yes ☐ No ☐

10) Do you know that the other universities in Bangladesh provide program about teachers' professional development and pedagogy?

Yes ☐ No ☐

If 'Yes,' then what is it? Please write the name of program (if you know):

.....

11) Do you teach large groups (i.e. larger than 50 students).? Yes ☐ No ☐

If "Yes", then maximum number of student is (please write) ……

12) What are the major problems /challenges you face in teaching of large group?

a.....

b……

c……

13) What are the major benefits of teaching small group (not more than 30) from your point of view?

a.....

b……

c……

14. To what extent do you think your available resources/teaching aids and facilities are adequate for effective and enjoyable teaching?

More than adequate ☐ adequate ☐ inadequate ☐

Comments (If any):.....

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15) What kind of teaching strategies do you apply usually in classroom teaching?

a.....

b……

c……

16) What sort of teaching aids/materials do you use usually in classroom teaching?

a.....

b……

c……

17) Please indicate your views by placing a tick *(√)* on the following statements in the appropriate box.

Statements	Strongly Agree	Agree	Neither Agree nor disagree	Disagree	Strongly Disagree
a) A teacher should be friendly with the students in classroom teaching					
b) A teacher should be autocrat in classroom teaching					
c) Classroom teaching should be student-centred					
d) Classroom teaching should be teacher-centred					
e) Self evaluation of teacher can improve the teaching quality					
f) Assessment by the students can contribute to enhance the teacher's teaching					

18) What kind of assessment do you administer **(One or More)** in your course usually?

Sudden Class Test ☐ Pre-decided Incourse/Mid term ☐ Central Course Final ☐

Presentation by Students ☐ Assignment/Project submission ☐ Field Work ☐
Any other form of students' Assessment (if any):……

19) What sort of Test and Items (Question) do you provide **(One or More)** in examination?

Written ☐ Oral ☐ Essay Type ☐ Short Essay Type ☐ M.C.Q ☐

Group Work ☐ Individual Work ☐
Any Other form of Test and/or Items (if any):……

20) Please give your suggestions on what sort of Professional Development and Pedagogy (PDP) course might be arranged for University teachers for improving teaching-learning quality in Bangladesh?

……

21) What roles do government/University should play in professional development and pedagogy (PDP) for the university teachers in Bangladesh?

Government Role	University/UGC Role
1)	
2)	

22) What do you think about the main barriers (three or four) of professional development of University teachers in Bangladesh?

1.....

2……

3……

23) If you have any higher degree from abroad with scholarship, (if not please skip this question) how did you get the scholarship for your professional development? Place a tick *(√)* in the appropriate box **(One or More)**:

Individual Initiative	
Working University Initiative	
UGC Initiative	
GoB Initiative	

24) Indicate your views by placing a tick *(√)* on the following statements in the appropriate box.

Statements	Strongly Agree	Agree	Neither Agree nor disagree	Disagree	Strongly Disagree
a) Professional development program requires and fosters the norm of continuous improvement for the university teachers					
b) Professional development prepares teachers to administer, interpret and effectively manage classroom teaching					
c) Professional development program is necessary for University teachers in Bangladesh					

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25) Do you think open and distance learning (e.g. Online, e-portal etc.) can play a role in professional development of University teachers in Bangladesh?

Yes ☐ No ☐

If "Yes", How can we do it (your suggestion please, if any)?.....

26) For how many years have you had access to a computer and Internet connection at your university?

a) computer at university..... .....years

b) Internet connection at university..... .....years

27) I would like to access your current **comfort level** related to using computers and the internet. Tick (√) the statement that best describes your feelings towards each activity.

Activity	**I am not at all comfortable**	**I am not very comfortable**	**I am somewhat comfortable**	**I am very comfortable doing this**
Compose, send and receive e mail				
Browse, Download and install academic Books, research Journal and teaching materials from the web				
Download and view documents/ files/software from the web				
Create a slide show presentation (i.e. Power point)				
Create a web page				
Use e-portfolio for my profession				

28) *What do you hope to gain from professional development program? (*Tick (√) *all that apply)*

a. Strategies for implementing the curriculum ☐

b. Increased understanding of content ☐

c. Assessment techniques and alternate ideas ☐

d. Strategies for teaching learning activities in classroom ☐

e. Strategies for teaching with technology ☐

f. Strategies of developing and using teaching learning materials ☐

g. Opportunities for peer/group collaboration/interaction ☐

h. Other _____ ☐

Thank you very much for your high cooperation

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APPENDIX-B

Professional Development and Pedagogy of University Teachers in Bangladesh: An Exploratory Study

Interview schedule (semi-structured)

for

VC/Pro-VC/Treasurer/Dean/Director/UGC/MoE

1) To what extent do you think that your university provides **professional development training course/program** for the teachers?

-Please explain the following issues from your point of view:
- -the current scopes
- -present practices
- - importance
- -university teachers' need
- -future plan and suggestions

2) To what extent do you think that your university provides **pedagogic (teaching-learning) training course/program** for the teachers?

-Please explain the following issues from your point of view:
- -the current scopes
- -present practices
- - importance
- -university teachers' need
- -future plan and suggestions

3) Do you think that the university teachers need **Professional and Pedagogic training program** in Bangladesh?

-If "Yes", then what is it? Please explain the nature of the program which would emphasize on teachers' professional development and pedagogic practices.

4) Please give your opinion as an educational leader on the 'Present infrastructural facilities including ICT and teaching learning practices of public universities'.

-What do you expect in this regard for future

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5) To what extent do you think the available resources/teaching aids (Multi-media, internet, wi-fi, Smart board, OHP, Whiteboard etc.) and facilities are 'adequate/inadequate' for effective and enjoyable teaching? If 'inadequate' how could you sort it out for your faculty/Institute/university?

6) 'Teaching is a skill with some strategies and methods in parallel with subject knowledge for teacher at university' –In what extent you agree or disagree with this opinion.

7) Could you think a pedagogic training program for teachers can contribute to enhance the quality of teaching at your faculty/Institute/university?

8) What sort of problems might happen to introduce this change initiative at your university? What could be helpful or hinders for the initiative of professional development and pedagogic training program-could you explain as an educational leader?

9) Please feel free to comment about anything that you would like to say about professional development of university teachers and did not have a chance to discuss as you answered the other questions on the study.

Thank you very much for your high cooperation

Ph.D Researcher:
Md. Abdus Salam, *MA Education (UK)*
Associate Professor and Former Chairman
Department of Nonformal and Continuing Education
Institute of Education and Research (IER)
University of Dhaka, Bangladesh
Cell: *01711-702630*, e-mail: *abdussalam@du.ac.bd*

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APPENDIX-C

Professional Development and Pedagogy of University Teachers in Bangladesh: An Exploratory Study

FGD Guide

Section A: Date of FGD: .....

Name of the University: .....

Year: ..... Subject Name:.....

Permission and Attendance:

Name and signature of the students who are interested to participate in FGD:

SL	***Name and Roll***	***Signature***
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

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Section B:

1. Give your opinion about the environment of classroom:
    1.1 seating arrangement, air-light, electricity, fan
    1.2 position of teacher, teacher movement,
    1.3 teaching materials (Multimedia, internet, wi-fi, OHP, whiteboard etc.)
    1.4 student-teacher ratio, student-teacher relationship, student-student relationship

2. Give your perception teaching learning process:

    2.1 teacher addresses you by name or roll or others

    2.2 teacher gives equal opportunity to all in the class

    2.3 teacher uses teaching learning materials

    2.4 teacher's subject knowledge on the topic

    2.5 teachers behavior, devilries, enjoyable learning

    2.6 teacher uses methods and strategies in classroom teaching

    2.7 teaching learning medium of instruction, assessment

3) To what extent do you think the available resources/teaching aids (Multi-media, internet, wi-fi, Smart board, OHP, Whiteboard etc.) and facilities are 'adequate/inadequate' for effective and enjoyable teaching? If 'inadequate' how could you sort it out for your faculty/Institute/university?

4) 'Teaching is a skill with some strategies and methods in parallel with subject knowledge for teacher at university' –In what extent you agree or disagree with this opinion.

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5) Could you think a pedagogic training program for teachers can contribute to enhance the quality of teaching at your faculty/Institute/university?

6) What sort of problems might happen to introduce this change initiative at your university? What could be helpful or hinders for the initiative of professional development and pedagogic training program-could you explain as a student?

7) Please feel free to comment about anything that you would like to say about professional development of university teachers and did not have a chance to discuss as you answered the other questions on the study.

.

Thank you very much for your high cooperation

Ph.D Researcher:

Md. Abdus Salam, *MA Education (UK)*
Associate Professor and Former Chairman
Department of Nonformal and Continuing Education
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APPENDIX-D

Professional Development and Pedagogy of University Teachers in Bangladesh: An Exploratory Study

Classroom Observation Checklist

Date of Observation: .....

Section A: Information

Name of the University: .....

Dept/Institute Name:……

Year: 1st/ 2nd/ 3rd/ 4th/ Master *(Please circle)*

Topic/lesson:.....

Class duration……

Learner profile:

Total students	***Enrolment in observed class***	***Female***	***Male***

Section B: Data

নিচের ছকে উল্লিখিত প্রশ্নগুলোর প্রতিটির ক্ষেত্রে যে মতামতটি যথাযথ তার সংকেত উক্তির ডান পাশের ঘরে **টিক চিহ্ন দিতে** হবে:

শিখন-শেখানো প্রক্রিয়া		**টিক চিহ্ন দিন**
১	শিক্ষক শ্রেণিকক্ষে সময়মত প্রবেশ করেছেন কি?	☐হ্যাঁ ☐ না
২	শিক্ষক সব শিক্ষার্থীদের প্রতি নজর দিয়েছেন কতটা?	☐ Good ☐ Fair ☐ Poor
৩	শিক্ষক সিবশিক্ষার্থীকেই প্রশ্ন করার সুযোগ দিয়েছেন কতটা?	☐ Good ☐ Fair ☐ Poor
৪	শিক্ষক প্রয়োজন মত ব্ল্যাকবোর্ড ব্যবহার করেছেন কতটা?	☐ Good ☐ Fair ☐ Poor
৫	শিক্ষক শ্রেণিকক্ষে শিক্ষা উপকরণ ব্যবহার করেছেন কতটা?	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
৬	শিক্ষা উপকরণ পাঠ সংশ্লিষ্ট ছিল কি ?	☐হ্যাঁ ☐ না
৭	শিক্ষক কেমন মাত্রায় শিক্ষার্থীদের শিখনে উৎসাহিত / প্রশংসা করেছেন?	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
৮	শিক্ষকের কণ্ঠস্বর কি সবার কাছে শ্রবণ উপযোগী ছিল ?	☐হ্যাঁ ☐ না
৯	পাঠ উপস্থাপনায় শিক্ষক বক্তৃতা পদ্ধতি ব্যবহার করেছেন কি মাত্রায়?	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
১০	শিখন-শেখানো প্রক্রিয়ায় শিক্ষক অংশগ্রহণমূলক কৌশল ব্যবহার করেছেন কি?	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
১১	শিক্ষক শিক্ষার্থীদের দলীয় কাজ দিয়েছেন কি?	☐হ্যাঁ ☐ না

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১২	শিক্ষকের বিষয় জ্ঞান পর্যাপ্ত মনে হয়েছে কি?	☐ Fully ☐ Poorly ☐ Not at all
১৩	শিক্ষক পুরো ক্লাসের প্রতি মনযোগী ছিলেন কি?	☐হ্যাঁ ☐ না
১৪	শিক্ষক শিক্ষার্থীদের সাথে হাসিখুশি ব্যবহার করেছেন	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
১৫	শ্রেণিকক্ষে শিখন শেখানো কৌশল আনন্দদায়ক ছিল কি?	☐হ্যাঁ ☐ না
	শিখন পরিবেশ	
১৬	শিক্ষাথীদের সংখ্যানুপাতে শ্রেণিকক্ষের আয়তন	☐যথাযথ ☐ যথাযথ নয়
১৭	শ্রেণিকক্ষে শিক্ষার্থীদের চলাফেরার জন্য যথেষ্ট জায়গা রয়েছে কি?	☐হ্যাঁ ☐ না
১৮	শিক্ষার্থীদের আসন পুনর্বিন্যাসের জন্য শ্রেণিকক্ষটির আকার পর্যাপ্ত কি?	☐হ্যাঁ ☐ না
১৯	শ্রেণিকক্ষের চকবোর্ডটি ব্যবহারের উপযোগী ছিল কি?	☐হ্যাঁ ☐ না
২০	শিক্ষার্থীদের আসন থেকে বোর্ডটি স্পষ্ট দেখা যায় কি?	☐হ্যাঁ ☐ না
২১	শ্রেণিকক্ষটিতে পর্যাপ্ত আলো ও বায়ু প্রবেশের ব্যবস্থা আছে কি?	☐হ্যাঁ ☐ না
২২	শ্রেণিকক্ষটিতে আসবাবপত্র কেমন ছিল?	☐ বেশি ☐ মোটামটি ☐ কম
২৩	শিক্ষার্থীদের কি ক্লাসে মনোযোগী মনে হয়েছে?	☐ হ্যাঁ ☐ মোটামটি ☐ না
২৪	শিক্ষক- শিক্ষার্থীদের সম্পর্ক বন্ধুত্বপূর্ণ কি?	☐ Good ☐ Fair ☐ Poor
	শ্রেণিকক্ষে ব্যবহৃত ভাষা	
২৫	শিক্ষক শ্রেণিকক্ষে প্রধানত বাংলা ভাষা ব্যবহার করেছেন	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
২৬	শিক্ষক শ্রেণিকক্ষে প্রধানত ইংরেজি ভাষা ব্যবহার করেছেন	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
২৭	শিক্ষক শ্রেণিকক্ষে বাংলা ও ইংরেজি উভয় ভাষা ব্যবহার করেছেন	☐ সর্বদা ☐ মাঝে মাঝে ☐ কখনো না
	শিখন যাচাই ও মূল্যায়ন	
২৮	শিক্ষক প্রশ্ন করে আজকের পাঠ যাচাই করেছেন	☐হ্যাঁ ☐ না
২৯	শিক্ষক প্রয়োজনে পাঠের সংক্ষিপ্ত পুনরালোচনা করেছেন	☐হ্যাঁ ☐ না

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Section C:

A) Please tick as appropriate. Here is a list of teaching strategies that may be used in the classroom. Please indicate how frequently the teacher uses each method by placing a tick in the appropriate box.

Strategies and Methods	Always	Sometimes	Seldom	Very Seldom	Never
a) Lecturing					
b) Demonstration					
c) Discussion					
d) Small group work					
e) Pair work					
e) Debate					
f) Question and Answer (Socratic approach)					
g) Problem-based learning					
i) Practical work					
j) Role Play					
k) Project work					
m) Lesson study					
n) Field work					

B) Here is a list of learning and teaching aids which may be used in the classroom. Please indicate the frequency of use by placing a tick () in the appropriate box.

Teaching Aids/Materials	Always	Sometimes	Seldom	Very Seldom	Never
Multimedia Projector					
Overhead Projector (OHP)					
Handouts					
Video/TV					
Tape-recorder					
Flip chart/Charts					
Textbook					
Blackboard/Whiteboard					
SMART Board					

Other Teaching aids (please specify if any): …….....

শ্রেণিকক্ষ পর্যবেক্ষণের অন্যান্য মন্তব্য (যদি থাকে):

উল্লেখযোগ্য দিক	**মন্তব্য**

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Section D: Facility of Classroom Checklist

*শ্রেণিকক্ষে শিক্ষক নিম্নোক্ত ICT উপকরণ ব্যবহার করেছে**
আথবা
*শ্রেণিকক্ষে নিম্নোক্ত ICT উপকরণ রয়েছে***

ক্রমিক	পর্যবেক্ষণের বিষয়	Yes	No	*মন্তব্য*
১	শ্রেণিকক্ষে হোয়াইট বোর্ড/ ব্লাকবোর্ড আছে			
২	শ্রেণিকক্ষে স্মার্টবোর্ড/ ইলেক্ট্রিক বোর্ড আছে			
৩	শ্রেণিকক্ষে বিদ্যুৎ সংযোগ আছে			
৪	শ্রেণিকক্ষে প্রত্যেক শ্রেণিকক্ষে বিদ্যুৎ সংযোগ রয়েছে			
৫	শ্রেণিকক্ষে বিকল্প বিদ্যুৎ ব্যবস্থা আছে			
৬	শ্রেণিকক্ষে/প্রতিষ্ঠানে ওভার হেড প্রজেক্টর আছে			
৭	শ্রেণিকক্ষে/ প্রতিষ্ঠানে মাল্টিমিডিয়া প্রজেক্টর আছে			
৮	শ্রেণিকক্ষে শিক্ষকের ব্যবহারের জন্য কম্পিউটার আছে			
৯	শ্রেণিকক্ষে কম্পিউটার সকলের ব্যবহারের জন্য উন্মুক্ত			
১০	শ্রেণিকক্ষে কম্পিউটার তালাবদ্ধ অবস্থায় রয়েছে			
১১	শ্রেণিকক্ষে ইন্টারনেট সংযোগ রয়েছে			
১২	বিশ্ববিদ্যালয়ের কম্পিউটার বিভাগীয় প্রধান/অফিস সহকারীর কক্ষে রক্ষিত			
১৩	বিশ্ববিদ্যালয়ের কম্পিউটার শুধুমাত্র অফিসের কাজে ব্যবহৃত হয়			
১৪	বিশ্ববিদ্যালয়ের সংশ্লিষ্ট বিভাগে কম্পিউটার ল্যাব আছে			
১৫	শ্রেণিকক্ষে কি কি আসবাবপত্র আছে?			

***** ক্লাস চলাকালীন পর্যবেক্ষণের ক্ষেত্রে
** শুধু শ্রেণিকক্ষ পর্যবেক্ষণের ক্ষেত্রে

অন্যান্য গুরুত্বপূর্ণ পর্যবেক্ষণ থাকলে লিখুন ;----------

তথ্য সংগ্রহকারির নাম, স্বাক্ষর ও তারিখ:

Ph.D Researcher:
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