



# **TEACHING -LEARNING METHODS: STATUS, ROLES AND EXPECTATIONS TO ENHANCE QUALITY IN TECHNICAL EDUCATION**

## **RESEARCH REPORT**

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### **List of Acronyms**

Acronyms	Description of Acronyms
SPSS	Statistical Package for the social Sciences
FGD	Focus Group Discussion
TVET	Technical and Vocational Education and Training
SDG-4	Sustainable Development Goal 4
QTE	Quality of Technical Education
KII	Key Information Interview
4IR	4 <sup>th</sup> Industrial Revolution
EEE	Electrical and Electronic Engineering
CSE	Computer Science and Engineering
CE	Civil Engineering
TOT	Training of Trainers

## **Abstract**

This study has carried out to identify and measure the present situation of the teaching learning methods of technical education and the roles of teachers for continuous improvement of teaching learning method. We have reviewed different literature related to our topic from different books, journals, articles and websites to study the necessity of our research work and previous study related to our topic. We believe that without quality in teaching learning method, it will be impossible to make our country as a developed one. We have collected data from principals, teachers and students of different technical institutions to know the status, roles and expectations of teaching learning methods. The research area, covered by ten Polytechnic Institutions and two Engineering Colleges in Bangladesh is to know the actual scenario of the teaching learning method of the technical institutions. The data has been collected from 700 respondents. We have collected data from 153 students of EEE Department, 133 students from CSE Department, 126 students from CE Department, 52 students from Mechanical Engineering Department, 24 students from Architecture Department, 22 students from Power Department and the rest students from other Departments, 95 teachers and 12 principals. We have arranged eight focus group discussions (FGD) to identify the experts' opinions and suggestions about our topic. Data are presented through tables and graphs by SPSS software and MS Excel. We have analyzed this data by SPSS software and found different aspects related to our topic. The status of teaching methodology is satisfactory but the teachers are overloaded. The roles of the teachers are remarkable though we need some training for the improvement of their quality. The regular classes should be conducted according to the class routine, the students should practice each instrument in practical classes and the practical classes should fulfil the current demand locally and globally. Finally, we have given some recommendations for the improvement of the teaching learning methods of our technical education.

## **Chapter One**

### **Introduction**

**1.1 Background of the Study:** At the present time it is an alarming issue for the next generation that their educational system does not ensure quality education. The educational system plays the main role of a graduate's skill, getting a job, and overall development of our economy. So, it is a burning issue for our policy makers, technical institution management system, and teacher, how we could develop the present educational system. How to make our graduates knowledgeable, skilled, and well-behaved person. Without these steps our all initiatives will become failure in the near future. Market demand is very important for our educational system. So, we want to upgrade continuously our curriculum for satisfying the industry demand. We want to improve the teaching-learning methodology for quality education and make skilled manpower for the near future.

**1.2 Statement of the problem:** Every year after graduation, we see a large number of graduate students do not get jobs although the job market has accessible vacancies. When they go abroad, they can't present themselves as skilled ones. As a result, unemployed graduates are increasing day by day. This is the main problem of our study. Even many graduates face problems after getting a job for lack of skills. We need to make our graduates skilled immediately for facing the 4<sup>th</sup> industrial revolution. We want to overcome this problem by taking necessary initiatives in teaching learning methodology. To develop the knowledge, skills and attitude the teaching methodology should be improved by adding different aspects in both theory and practical classes.

**1.3 Importance or rationale of the study:** Advanced teaching methodology for ensuring quality education is the basic need for the development of skilled graduates/manpower in technical education. Skilled manpower will be exported to foreign countries and will earn foreign currency as well as will keep contributing to developing our country. It is essential that our graduates will be acquired the skills to fulfill our country's development which will be the milestone of 2030.

Without quality education in the technical sector, meeting the challenge of increasing unemployment problem in the 8<sup>th</sup> five-year plan (2021-25) would remain an unrealistic goal.

**1.4 Purpose and Objectives of the study:** Our aim is to know the current status and roles in the teaching – learning methodology of technical institutions in order to devise policies that guarantee the quality of technical education, which is the overall goal of our research. However, the specific objectives of our study are given below-

- (i) To find out the present status of the teaching-learning methods of technical education in Bangladesh.
- (ii) To study the roles of teachers in ensuring quality education at technical institutions.
- (iii) To provide suggestions for improving the teaching methodology to enhance the quality of technical education.

**1.5 Visible Impact on TVET:** If we implement our study results in TVET sectors we believe that the quality of our TVET students will be improved. It will make our TVET graduates more skilled, well behaved. It will fulfill the market demand locally and globally, the demands of 4IR which enhance the 8<sup>th</sup> five year plan and SDG4s of Bangladesh. Our strategies will be the part of making the developed country by 2041 by overcoming the development junction of 2030.



## **Chapter Two**

### **Literature Review**

**2.1 The summery of literature according to the key aspects:** According to Uwaifo (2009), technical education is the training of technical oriented personnel who are to be the initiators, facilitators and implementers of technologically development of a nation. The profession of technical education has direct impact than any other profession on the development of a country. The contribution of technical education plays vital role from electrical and electronics technology, mechanical/automobile technology, metal work technology, wood work technology, building technology, etc. Technical education is more practical oriented education than other education that has a unique content and approach which makes demandable day by day (Prof. Reko Okoye 2016).

Quality technical education has become a vital issue for skilled manpower not only for the foreign job market but also for the local job sector. It is affecting financial growth, infrastructural development, and socio-economic improvement. In the process of attaining SDG4 which is 'Ensure inclusive and equitable equality education and promote life-long learning opportunities for all', the policy makers should implement proper acts, launch suitable programs and ensure an effective guideline for quality technical education. Teaching and learning are the main issue for quality education.

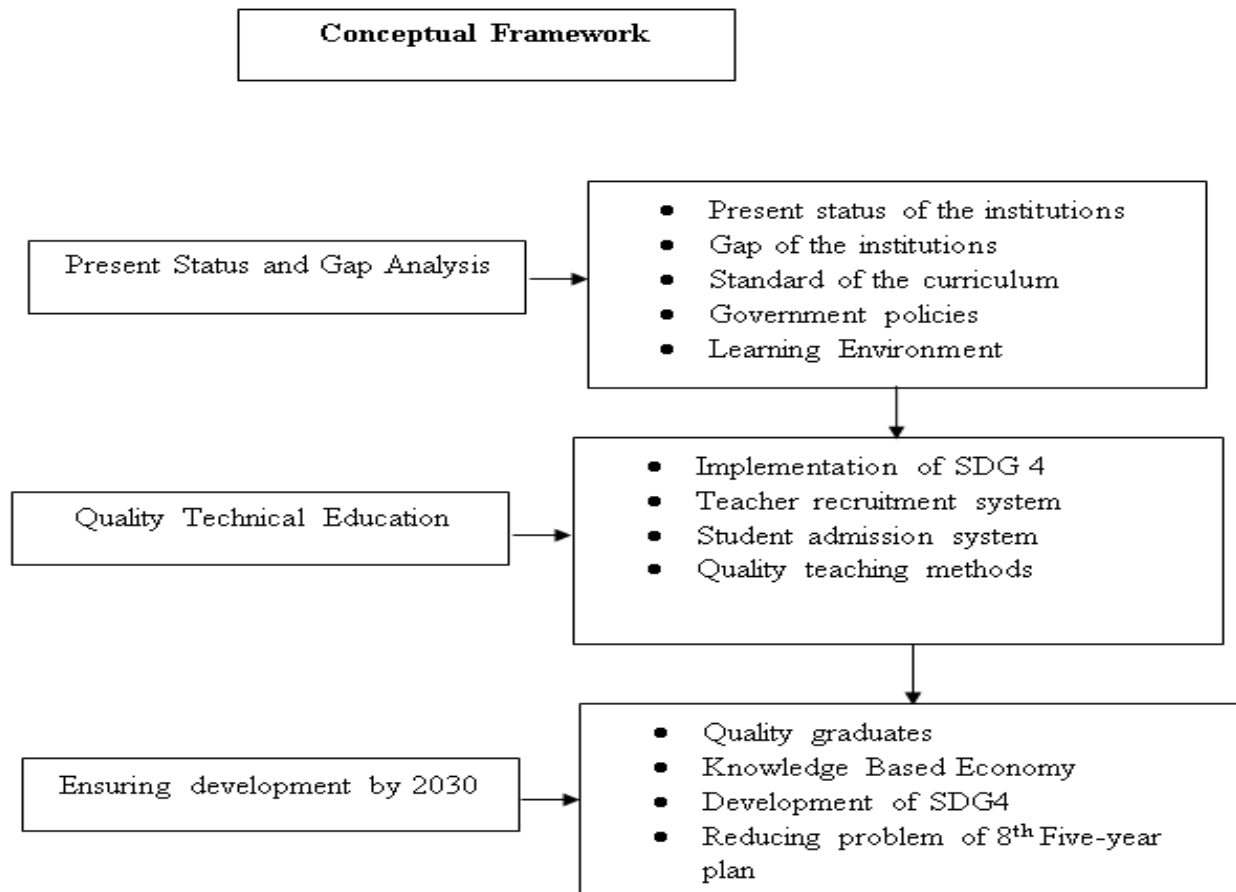
Teaching and learning are two activities that one reflects the other, so that it's preferable to use the term "Teaching and Learning Methods" rather than "Teaching Methods". As we all know the outcome of teaching is learning, therefore the separation of the two activities is not appropriate (Tom, 1997). The criteria for measuring good teaching are the amount of the quality of learning the students get (Shahida, 2011). Our aims are to improve teaching - learning methodology in technical education against learning outcomes. Generally teachers use to apply the traditional method of teaching which is a teacher's centered ignoring the interaction of the students'. There are varieties of students in a class. So every teacher should apply different methods of learning to reach all students effectively. Teacher should look the development of information and communication technology which will change the mindset of new generations (Dr. Ismail Al-Rawi, 2013).

Quality education means that teaching is not just facts, but it shows how to determine those facts. It involves critical thinking, learning to work with others, work independently, a broad range of subjects (Billah, 2017). Quality technical education is playing a vital role in making skilled graduates. Service-oriented training of teachers and implementation of the standard curriculum in a teaching-learning environment are the most important things for quality technical education. Akhter (2017), mentions some necessary criteria for measuring the quality of higher education in private universities in Bangladesh. He observed that the education quality of private universities is not up to the mark as for the lack of full-time and experienced faculty members. The infrastructure of some private universities is below standard compared to public universities. Ehsan(2007) point out that regular class, regular passing out of graduation, peaceful energetic campus environment are the prerequisite for higher quality education. His comparison between Private Universities and public universities indicates the lacking of qualified and efficient full-time faculty in Private Universities. Hossain (2014)find out the root level problem of our educational system because of poor organization structure, political influence, lack of training in the education sector, and shortage of qualified teachers. Since there is no sufficient work done by the researchers in the last decade about the status of the quality of technical education,in recent times to fulfill SDG4 by 2030 and the unemployment problem of the targets of the 8<sup>th</sup> five-year plan (2021-2025) and making skilled manpower are the burning issues for reaching as the developed country by 2041, so it is our interest of study to ensure quality in technical education through the proper implementation of advance teaching –learning methodology in our country.

That is why we want to study the teaching-learning methodology of present status, roles and way forward for making skilled manpower in technical education in Bangladesh.

**2.2 Conceptual Framework:**Without a conceptual framework, the research will be intricate forreaders. That is why we have made a conceptual framework to visualize the structure of theresearch easily. It explains the natural progress of research work. In an expert’s opinion, education combines knowledge, skill, and attitude. For ensuring quality technical education (QTE) we need to improve the methods of teaching-learning and practical classes and attitude.

The conceptual framework of our study is shown below-



## **Chapter Three**

### **Methodology**

**3.1 Research Design:** Our research population is four (4) Engineering Colleges and fifty (50) Polytechnic Institutions. Among this population to calculate the sample size of the total population, we have used the sample size calculator from internet hence; we have selected twelve (12) institutions for investigation which are two Engineering Colleges and ten Polytechnic Institutions from our country. We have selected purposively two (2) Engineering Colleges from four Engineering Colleges.

- (i) Sylhet Engineering College
- (ii) Mymensingh Engineering College

We have used multi-stage sampling process for collecting data. We have selected three divisions out of eight divisions through lottery. Again we have selected two polytechnic institutions from each division through lottery. To study the actual situation we have selected two Polytechnic Institutions out of four Mohila Polytechnic Institutions. To collect the full scenario we have selected three more Polytechnic Institutions in total 12 institutions from the country.

**3.2 Scope of Study:** Ensure skilled manpower and knowledgeable graduates by improving teaching learning methods of technical education.

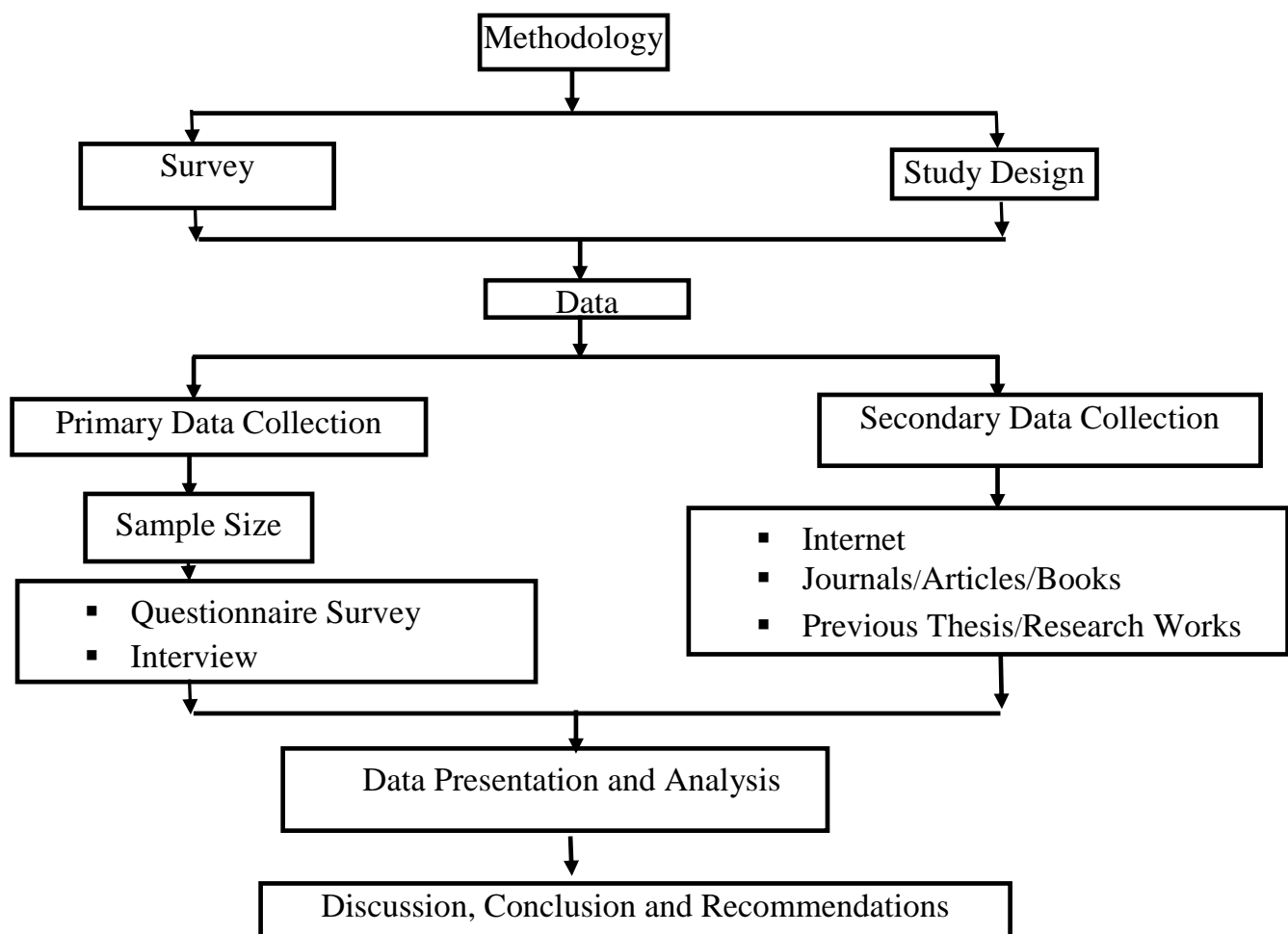
**3.3 Sample and Sample Size:** The data has been collected from ten Polytechnic Institutes and two Engineering Colleges. Total respondents are more than 700 in which 600 students, 12 principals and 95 teachers.

**3.4 Sampling Techniques:** To achieve our research objectives we have followed the mixed – method approach in our study. Both qualitative and quantitative data have been used in our study.

**3.5 Data Collection Tools:** We have collected data from two (2) Engineering Colleges and ten (10) Polytechnic Institutions. Face-to-face interviews have been conducted with the teachers and students of twelve (12) technical institutions.

**3.6 Use of Data Collection Tools:** Primary data has been collected by using a questionnaire survey from all the respective respondents. From websites, journals/articles, books and different literature related to our topic of previous research works, we have found the secondary data.

**3.7 Data Analysis Techniques:** Data analysis is the most important process for getting information. We have collected the data and organize it for analysis. The graphical representation has given for the percentage analysis of structured questions. In addition, we have used SPSS software for graphical representation in different chapters of the report. We have followed the Mixed-method approach in our study. Both primary and secondary data have been collected. Both qualitative and quantitative data have been used in our study. Qualitative data are the respondents' experiences, understanding, and perspective approach. Quantitative data have obtained through face-to-face interviews with the respondents such as from management, teachers and students etc. of our target institutions. The flow chart of the methodology-



**3.8 Ethical Consideration:** We have studied hardly and try to improve the TLM (Teaching Learning Method) of technical education to way out our graduates making more skilled, knowledgeable and fit for job market in locally and globally. We have written our report from both primary and secondary data. We have maintained our ethical standard according to the instructions of DTE.

**3.9 Limitations of the Study:** We have predicted about the quality of fifty Polytechnic Institutes and four Engineering Colleges of Bangladesh. It would take more times, so time bounding is one of the major limitations of our study. It was very much tough to investigate all the Polytechnic Institutions and Engineering Colleges of our country. So sample size is another limitation of our study.

## **Chapter Four**

### **Results and Interpretation**

#### **4.1 Status of Teaching Methodology of Surveyed Technical Institutions:**

**4.1.1 Status of Teaching Methods:** Two important aspects of teaching are delivering and receiving information. A teacher should try to deliver his concepts and expertise, educational and scientific knowledge and facts to his students from his best way. Various new and advanced methods are preferred because they have the potentiality to enhance the quality of education which helps in the development of the goals of the country ([Bourner, T., and Flowers, S. 1997](#)).

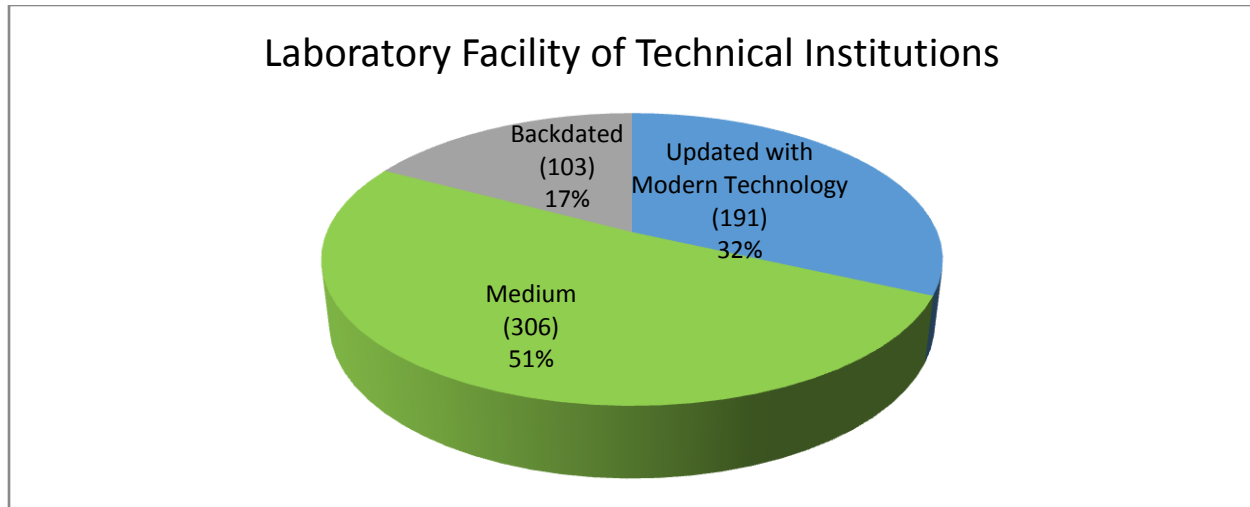
Teacher influences students' development and their attitudes. That is why, teaching methodology is very important for making skilled manpower to develop the nation of our country. The students gradually develop an autonomous work attitude and professional habits through reflection on their learning and work experiences (along with teachers). So the role of the learner, is very important, which is closely related to the teacher's role, that is the own understanding of teaching and learning, self-image; since the beliefs of the teachers play a special role in the implementation of learning ([Brink-mann, 2015](#)).

A good teaching method enables a student to question his preconceptions; it motivates him to learn more, nomatter how many difficult situations he faces. It makes him a person who sees himself responsiblefor finding problems, evaluating them thoroughly, and then answering the solutions through his mindset. Awardsshould be presented to faculty members as a way to improve teaching quality for these barriers and requirements. Teachers and professors, no matter local or international, are the leaders who provide ideas, insights, and strategies toimprove education and empower effective teaching strategies in higher education ([Bidabadi, et al 2016](#)).

We have collected data about the Teaching Methodology of different technical institutions over the countryof 600 students and 100 teachers. The collected data are arranged in tables and graphs by SPSS software and MS Excel. The results are presented below with necessary discussions.

#### 4.1.2 Students Feedback on Status

**Figure of 4.1.2:** Situation of laboratory facility of technical institutions.



About one third students' opinion is that the laboratory facilities of the technical institutions are updated with modern technology. But for some institutions the lab facilities should be updated. We should improve our lab facilities to meet the criteria of 4<sup>th</sup> industrial revolution.

**Table 4.1.3: Situation of delivering course materials, course contents uses of modern technology and Methods.**

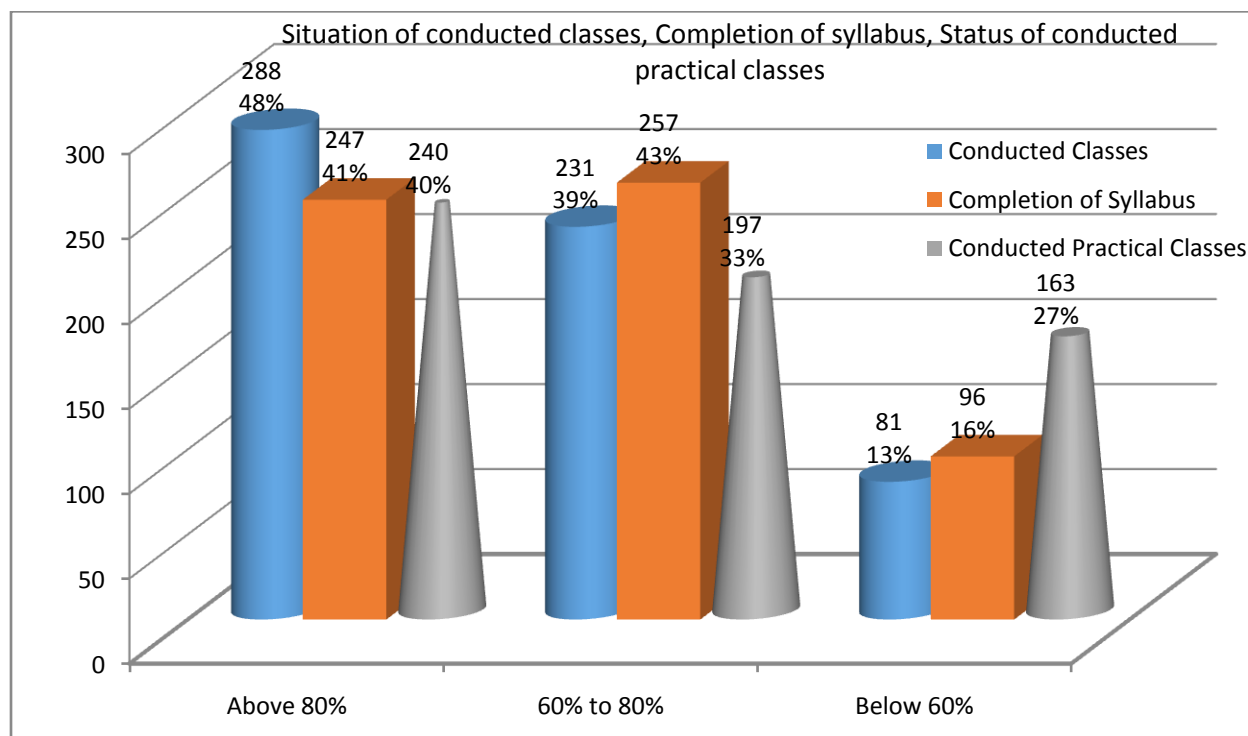
Situation of delivering course plan, course materials and digital contents			Situation of delivering classes with modern technology.			Situation of delivering classes using modern technology		
Indicator	Frequency	%	Indicator	Frequency	%	Indicator	Frequency	%
All	257	42.8	Yes	416	69.3	Projector	335	55.8
Digital Contents	54	9.0				Online Class	46	7.7
Course Materials	82	13.7	No	184	30.7	Blended Learning	110	18.3
Course plan	140	23.3				None	109	18.2
None	67	11.2	-	-	-	-	-	-
Total	600	100.0		600	100.0		600	100.0



Almost 70% teachers use the modern technology for delivering classes. Projector is mainly used. Maximum teachers provide all kinds of course plan, course materials and digital contents. It is very essential for quality education. The respective authority should implement 100% modern technology based classroom and the teachers should use the modern technologies by the supervision of the principals for improving the knowledge and skills of our graduates.

**Table and Figure 4.1.4: Situation of conducted classes, completion of syllabus, status of practical classes**

Question	Situation of conducted classes		Completion of syllabus		Status of practical classes	
	Frequency	%	Frequency	%	Frequency	%
Above 80%	288	48.0	247	41.2	240	40.0
60% to 80%	231	38.5	257	42.8	197	32.8
Below 60%	81	13.5	96	16.0	163	27.2
Total	600	100.0	600	100.0	600	100.0

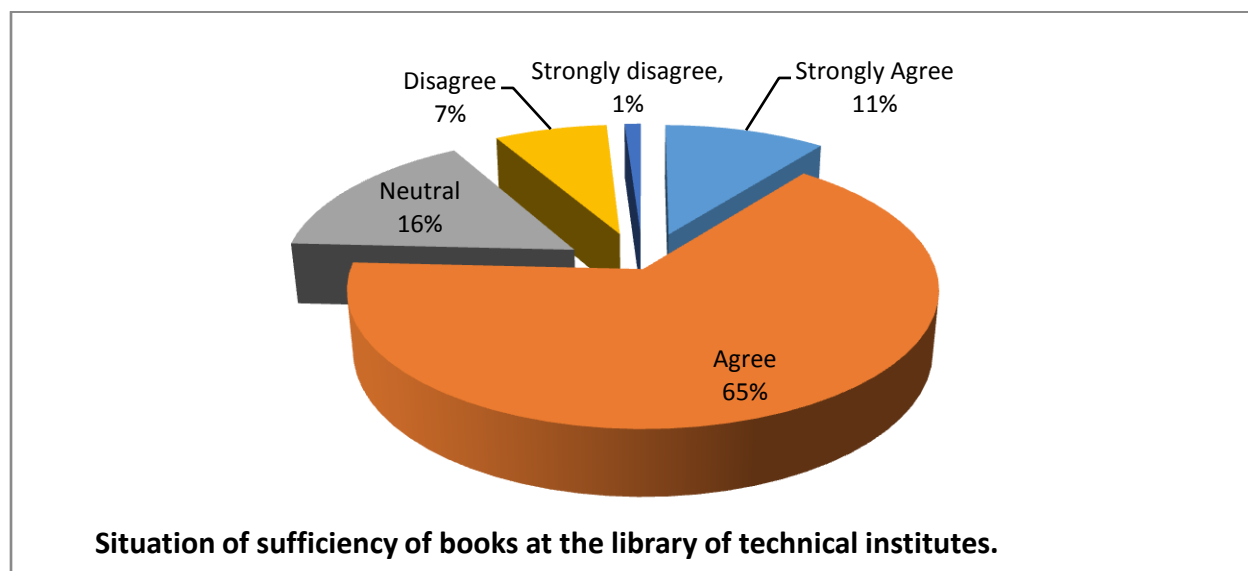


Situation of conducted classes, completion of syllabus, and status of practical classes is satisfactory. About half of the respondents say that more than 80% classes conducted by course teacher within the timeline. They are completing the syllabus and conducting practical classes more than 60%. The teachers should complete the syllabus and take practical classes within the

semester. These factors must be implemented by the supervisions of the principals and the Head of the Departments. Sometimes it should be followed up by respective higher authority.

#### 4.1.5 Teachers Feedback on Status

**Figure 4.1.5:** Situation of sufficiency of books at the library of technical institutes.



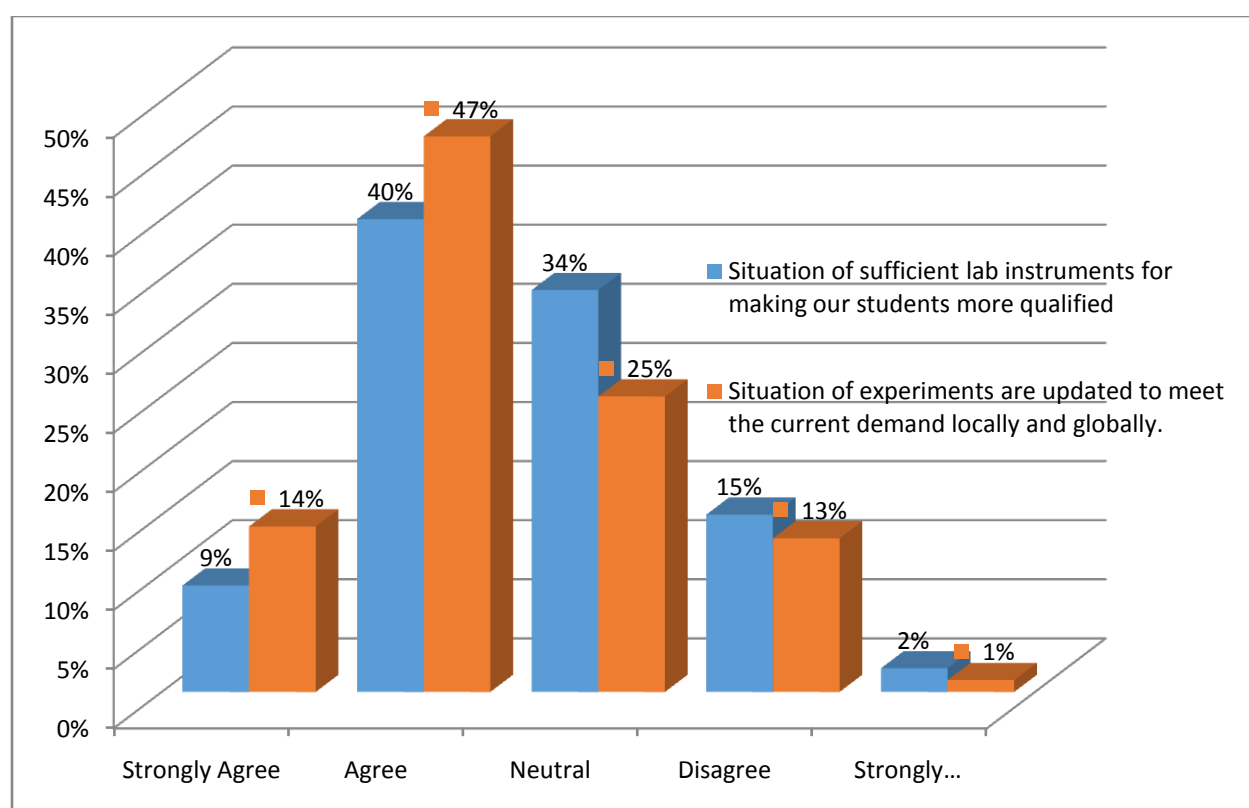
More than 70% teachers' opinion is that their library has sufficient books. About one third of the teachers are neutral or disagree with the availability of the required books. That is why the authority should check the library and preserve updated books for making our graduates more knowledgeable.

**Table 4.1.6:** Situation of using modern technology, supplies of course plan, course materials and digital contents which will make our students more qualified.

Situation of uses of modern technology which will make our students more qualified			Situation of supplies of course plan, course materials and digital contents which will make our students more qualified		
Indicator	Frequency	%	Indicator	Frequency	%
Strongly Agree	53	56	Strongly Agree	47	50
Agree	40	42	Agree	36	38
Neutral	1	1	Neutral	10	10
Disagree	1	1	Disagree	2	2
Strongly disagree	0	0	Strongly disagree	0	0
Total	95	100	Total	95	100

More than 90% teachers' opinion is that they are using modern technologies at their class room and developing the course plan, course materials and digital contents to make our students more qualified. About 10% teachers are neutral or disagree to deliver course plan, course materials and digital contents. The authority should motivate them to supply these materials for the improvement of quality of our graduates.

**Figure 4.1.7:** Situation of sufficient lab instruments for making our students more qualified and experiments are updated to meet the current demand locally and globally.



More than half of the teachers are neutral or disagree with sufficiency of the lab instruments at their respective labs. The respective authority should take initiative to modernize our lab for fulfilling the current demands of the industries to make our graduates more skilled.

## **4.2 Roles of Teachers of Surveyed Technical Institutions:**

**4.2.1 Roles of Teachers:** The roles of teachers will motivate our students to develop themselves along right way. Conducted research reveals that students' perception on teacher roles is aimed particularly at raising students' achievement. They expect teachers to relate to students individually, to enact interactive learning, being free from biases, motivates, guide, and support and help students grow. Teachers' work is not just simple, routine tasks anymore.

The role of a teacher as an institutional leader who influences the professionalism. The role of a teacher viewed as a multidimensional, dynamic construction that emphasizes the differentiating set of work-related tasks or activities (Valli & Buese, 2007). Another studies evident that teachers' role are changing naturally all the time through expanding responsibilities outside the classroom, intensified work within the classroom, and raising demands for teachers' professionalism (Bartlett,2004). The teachers' role extended by the rising requirements to teach in virtual environments which differs from traditional teaching and calls for new competencies, in particular interaction and communication (Alvarez, Guasch, & Espasa, 2009). Grasha (1994) studied teaching styles that reflect different roles of teachers in the teaching and learning process such as: expert as information transmitter, formal authority who sets standards, personal model who teaches by illustration and direct example, facilitator who guides and directs by asking questions, exploring options, suggesting alternatives, and delegator who develops students' ability to function autonomously. Darling-Hammond & Bransford (2005) describe the conceptual framework of teacher roles that highlights knowledge of learners, curricular content and goals, and teaching supported by classroom environments (Kamila Ludwikowska 2020).

Teachers are seen as role models, they are characterized as researchers, mentors, and curriculum developers (Bouckaert&Kools, 2017). They still have a basic understanding of how people learn and develop. Therefore, they must acquire competencies to be able to develop curriculum that satisfy the students' needs, the demands of advance technology locally and globally and the social purposes of education. They must have to manage the diverse classroom, assess students' performance, and use technology in the classroom (Darling-Hammond &Bransford, 2005).

To know the practical situation of the roles of teachers in teaching learning methods of our country we have collected data from more than 700 students and teachers. The data are sorted in tablesand graphs by SPSS and MS Excel software and presented with necessary discussions below.

#### 4.2.2 Feedback of Students on Roles

**Table 4.2.2:** Roles of teachers' guidance, facilitator, effective planner and information providing, excellent assessment quality.

Situation of teacher guidance quality			Situation of teacher's facilitating quality			Situation of teacher's effective planning and information providing quality		Situation of teacher's excellent assessment quality	
Indicator	Frequency	%	Indicator	Frequency	%	Frequency	%	Frequency	%
Very much Guide full	222	37.0	Strongly Agree	147	24.5	139	31.5	204	34.0
			Agree	284	47.3	261	43.5	251	41.8
Guide full	312	52.0	Neutral	139	23.2	122	20.3	116	19.3
Not so much	66	11.0	Disagree	23	3.8	19	3.2	17	2.8
	-	-	Strongly disagree	7	1.2	9	1.5	12	2.0
Total	600	100.0		600	100.0	600	100.0	600	100.0

About 70% students' opinion is that the teachers are well guiding, facilitator, effective planner and excellent assessor, but about one third students are neutral or disagree with this factors. The teachers should take training in teaching methodology. Training section of Directorate of technical education should take initiatives for the improvement of our teaching methods by arranging respective training of our teacher.

### 4.2.3: Teachers Feedback on Roles

**Table 4.2.3:** Roles of a teacher as a strong mentor, excellent facilitator, role model, excellent assessor for the students.

Roles of teacher as a strong mentor for the students.			Roles of teacher as an excellent facilitator for the students.		Roles of teacher as a role model for the students.		Roles of teacher as a excellent assessor for the students.	
Indicator	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Strongly Agree	34	36	33	35	33	35	27	28
Agree	54	57	51	54	46	48	56	59
Neutral	06	06	10	10	15	16	12	13
Disagree	01	01	01	01	01	01	0	0
Strongly disagree	00	00	00	00	00	00	0	0
Total	95	100.0	95	100.0	95	100.0	95	100.0

More than 80% teachers' opinion is that they are well guiding enough for the development of our students. But there are more that 10% teachers' point of view is that they should be improved in their roles.

**The roles of teacher for becoming a role model:** the teachers should update themselves with knowledge and skills and deliver smartly to the students. They should give extra time for weak students. The teachers should take good preparation before enter the class, enter into the class with just time, complete the syllabus in time, continuous assessment results should publish before the preparatory leave. They should show dreams for the development of our students and familiar with the 4IR. They should make the class more interesting with updated modern technology such as projector, power point file, blended learning, animated video etc.

### **4.3 Expectations of Teaching Methodology of Surveyed Technical Institutions:**

**4.3.1 Expectations of teaching methods:** The main strategy of modern education should focus on the students' independent activity, the organization of self-learning environments, and experimental and practical training, where students have a choice of actions and can use initiative as well as flexible training programs where students can work in a comfortable rhythm. Flexible training programs and strategies that focus on student's independence, choice of actions, self-learning, experimental and practical training should be the focus of higher education institutions to support the comfortable learning rhythm. In this regard, the method of training infrastructures encourages the profession interests. It enhances the impact of training material to provide a piece of knowledge with enhanced strength, spirit, freedom and motivation, are important for their contribution to the competencies of future specialists. Moreover, behavioral modeling, peer feedbacks, storytelling, action learning methods are important for professional training (Yakovleva, N. O., & Yakovlev, E. V. 2014).

The emphasis on student engagement during teaching and learning has the power to derive the teaching method toward the active teaching methods fosters meaningful learning through maximum students' involvement. Moreover, peer learning methods also played a part in the promotion of meaningful and formative assessment of student's activities (Sá, S. O., Alves, M. P., & Costa, A. P. 2016).

The concept of the main purpose during teaching should also be taken into account by professors to avoid the negative repercussions and to enhance the teaching outcomes. In this regard, professors shouldn't be provided with full freedom in choosing teaching methods because most of the time, despite teaching expertise, it was observed that wrong teaching methods resulted in negative outcomes and the purpose of teaching and learning wasn't fulfilled (Finn, S. 2020).

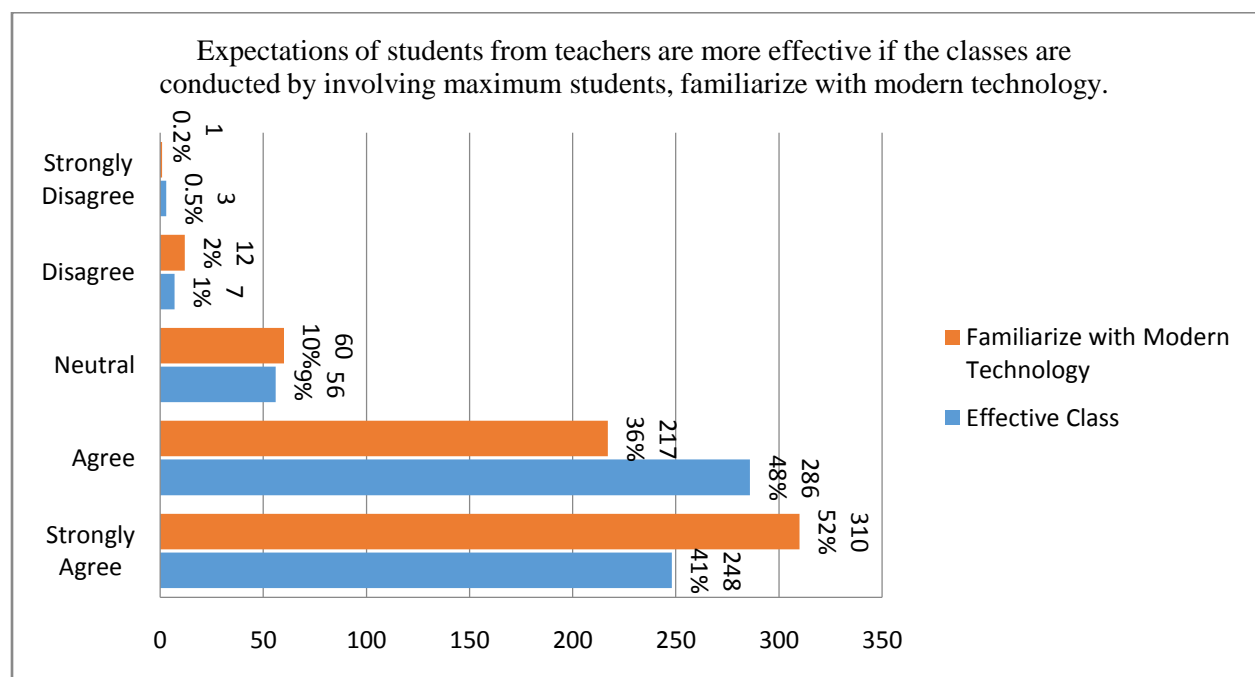
A teacher tries to provide the best of his knowledge and that's why the selection of teaching method becomes important automatically, not only to deliver the knowledge but to avoid the destruction of learning objectives. The innovative methods of teaching aren't only important for classrooms but also important for the whole country because effective teaching delivers effective knowledge if delivered through the appropriate method, produces the learners who have the expertise to empower their country, people, and governance (Subramani, P. N., & Iyappan, V. 2018).

To know the expectations from students, teachers and principals of our technical educations, we have collected data from 12 institutions throughout the country. SPSS and MS Excel software have used to present this data through different graphs and tables. Necessary discussions are included to know the actual situations.

#### 4.3.2 Students Feedback on Expectations

**Table and Figure 4.3.2:** Expectations of students from teachers are more effective if the classes are conducted by involving maximum students, familiarize with modern technology.

Expectations of students from teachers are more effective if classes by involving maximum student			Expectations of students from teachers familiarize with modern technology.		
Indicator	Frequency	%	Indicator	Frequency	%
Strongly Agree	248	41.3	Strongly Agree	310	51.7
Agree	286	47.7	Agree	217	36.2
Neutral	56	9.3	Neutral	60	10
Disagree	7	1.2	Disagree	12	2
Strongly disagree	3	0.5	Strongly disagree	1	0.2
Total	600	100.0	Total	600	100.0





More than two third students expected that the classes will be more effective if the teachers involve maximum students at the class and the classes get familiarized with modern technology. More than 40% students are strongly agree with the classes involving maximum students, will be more effective but 10% students' are neutral or disagree with this matter. They may be weak students or sometimes absent at the classes. That is why the course teacher should give attention on these students for the improvement of their quality to meet the demand of 4IR.

**Table 4.3.3:** Expectations of students' from teachers' that they should take maximum classes following the class routine, complete the syllabus within timeline and result of continuous assessment before preparatory leave.

	Expectations of students from teachers take maximum classes following the class routine		Expectations of students from teacher complete the syllabus within the semester		Expectations of students from teacher publish the result of continuous assessment before preparatory leave.	
Indicator	Frequency	%	Frequency	%	Frequency	%
Strongly Agree	332	55.3	319	53.2	311	51.9
Agree	229	38.2	204	34	218	36.3
Neutral	32	5.3	63	10.5	58	9.7
Disagree	4	0.7	12	2	8	1.3
Strongly disagree	3	0.5	2	0.3	5	0.8
Total	600	100.0	600	100.0	600	100.0

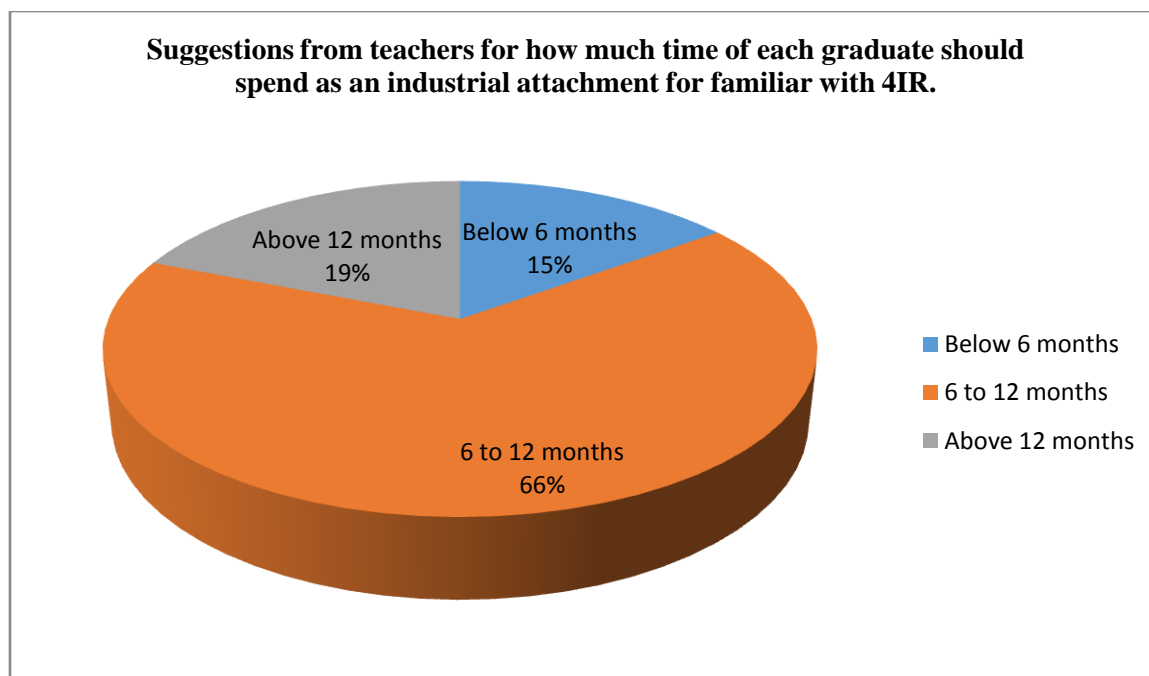
More than 80% students opinion is that the students expected from the teachers to take maximum classes following the class routine complete the syllabus within the semester and publish the result of continuous assessment before preparatory leave. The authority should monitor to implement these expectations of students for quality improvement of our teaching methods.

#### 4.3.4: Teachers Feedback on Expectations

**Table 4.3.4:** Every student should practice each experiment; class should conduct according to class routine, cover whole syllabus before examination and proper judgments to students.

Question	Every student should practice each experiment at practical class		Every class should conduct according to class routine.		Examination covers whole syllabus and proper judgment to student.	
	Frequency	%	Frequency	%	Frequency	%
Strongly Agree	68	72	64	68	45	48
Agree	22	23	24	25	25	26
Neutral	05	05	05	05	05	05
Disagree	00	00	02	02	20	21
Strongly disagree	00	00	00	00	00	00
Total	95	100.0	95	100.0	95	100.0

More than 90% teachers' opinion is that every student should practice each experiment, conduct classes according to the class routine and more than 70% teachers' opinion is that more than 70% course should be completed before the final examination and the teachers should judge the students properly. One-fourth of the teachers is neutral or disagrees for completing 100% course contents before final examinations. Their opinion may be for the extra load on the students. That is why the teacher should follow the current demand of the industries and teach related topics meeting the demand of 4IR.



**Figure 4.3.5:** Suggestions from teachers about industrial attachment of students:

More than 80% teachers' opinion is that the graduates should spend above six months with industrial attachment for familiar with 4IR. The industrial linkage with the graduates and teachers should be improved and we should make more and more MoU with different industries so that we can understand their demand and develop our curriculum according to their demand for improving the skills of our graduates.

**Some expectations of students from the authority to enhance teaching learning methods:**

The teachers should be trained on teaching learning methodology where sufficient teachers must be needed to full fill the standard teacher student ratio. The classroom should be smart digitally with sound system. The authority should ensure time period of semester and subject based training. The teachers training should be needed with TOT based by industrial experts.

**Some expectations of teachers from students for making the class more effective are from their points of view:** The students should be sincere, attentive and attend regularly at the class. They should discuss in groups, try to find problems and solve their problems sharing with their classmates and respective course teachers.

**Some expectations of KII from the teachers for improving Teaching Learning Method are:**

The teachers should demonstrate practical classes by themselves in respective courses. Maximum classes should follow the class routine and the students should operate the instruments in each practical. They should take extra care for weak students. Every teacher should be role model, inspire their students for regularity, attentiveness and sincerity.

**The suggestions of KII for improving the Teaching learning method:** We should ensure quality and sufficient teachers meeting the standard teacher student ratio. Available classroom and lab facilities are needed for us. We should introduce more time for industrial attachment for students and arrange industrial attachment for teachers also. Simple and relevant syllabuses related to job market are needed to make our graduates more fit with 4IR.

## **Chapter Five**

### **Discussion, Conclusion and Recommendations**

#### **5.1 Discussion of Results:**

During our project we have found many aspects related to our topic. Among these aspects the mentionable points are: Infrastructural situation is suitable; in some cases maintenance is needed. The government policy is enough for making our graduates qualified enough according to maximum principals' opinion. Modern technology should be introduced according to local demand and related to 4IR.

There are sufficient books to maintain the technical Departments, but some new books should be brought for opening new technologies at the current situation. Updated books should be needed for making our graduates more knowledgeable.

Most of the teachers are conducting classes with modern technology but they are over loaded due to insufficient teachers. The lab facilities is medium level that is why authority should supply more instruments according to local and international demand to meet the demand of 4IR. The teachers' and principals' opinion is that every student should operate each instrument of each practical and class monitoring is very important for conducting the classes following the class routine and advance technologies: multi-media projector, videos and blended learning etc. should be used at the classes.

Maximum teachers are taking classes following the class routine, trying to finish the syllabus before preparatory leave. The teachers are overloaded due to lack of sufficient teachers.

The roles of teachers are remarkable but needed subject based training. Training in teaching learning method are also needed for enhancing quality of our teachers. The time of industrial attachment of graduates should be increased and teacher attachments are also needed to familiar with 4IR.

About 40% teachers' opinion is that the experiments of technical education are not updated enough to meet the current demand locally and internationally. That is why the authority should give close attention about this matter for making our graduates more skilled.

## **5. 2 Conclusion:**

We have studied the teaching learning methodology of technical education of Bangladesh to know the Status, Roles and Expectations to way out for the improvement of the quality of teaching learning methods. During the study period we have found that the infrastructural situation is satisfactory everywhere but the duties and responsibilities are very much over loaded of the teachers of technical institutions. There are some recommendations are given by the students, teachers and principals for the improvement of the teaching learning methods of our technical education.

## **5.2 Recommendations:**

There are some recommendations needs for further improvement of teaching learning methods. We need sufficient and trained teacher in the technical education sector. Every teacher should have excellent presentation skills, student friendly and dedicated for his service. Teacher student ratio must be standard in our sector.

The students should be enrolled with admission test for polytechnic institutions and the craft instructors should be recruited based on technology.

The teachers should follow the class routine with highest effort and take preparation before entering the class. They should try to conduct their classes with maximum effort and complete the syllabus within the semester. The practical classes should be conducted more effectively and sincerely with updated technology following the curriculum. The teachers also should take initiative for the development of weak students. The principals and Head of the Departments should take initiative to maintain and monitor these issues time to time.

The authority should implement 100% modern technology based classroom and the teachers should use this for improving the knowledge and skills of our students. The authority should check the library and preserve updated books for making our students more knowledgeable.

For some institutions the lab facilities should be improved to meet the demand of 4<sup>th</sup> industrial revolution and making our graduates more skilled. Social image should be changed with

4<sup>th</sup> Industrial Revolution. The government should take initiatives to set up different industries related to our subjects of technical institutions.

Job placement cell should be introduced in each institution. The attachment with industry should be improved. That is why DTE should take initiative to say the principals for improving the relationship with the neighbor industries through MoU. The time of industrial attachment should be increased.

The teachers should be trained and more skilled with teaching methodology and industrialattachment. The training section of DTE should take initiative to arrange training on teaching methodology of teachers and subjective training also needed. The government should make compulsory to the industries to establish the linkage with neighbor institutions.

The attachment with the foreign industries should be improved. So the Government should take initiative to send our technical graduates to different countries for higher studies or jobs related to their discipline.

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## Appendix A1: Questionnaire

### A Survey on

#### Teaching-Learning Methods: Status, Roles and Expectations to Enhance Quality in Technical Education (For Students)

We have come from the research and knowledge management cell, Directorate of Technical education, Agargaon, Dhaka. We want to take information about Teaching-Learning Methods for enhancing the quality of Technical education from you which will be kept absolutely confidential and no one other than concerned people will access this information. We are grateful to you for your time and sharing information.

Do you agree with us? (i) Yes (ii) No

#### Introductory Aspects

a	Name of the Institution:			
b	Name of the Respondent and contact number			
c	Education Level	(a) B. Sc. Engineering	(b) Diploma	
d	Gender	(a) Male		(b) Female
e	Department			

	Status					
1	What is the situation of lab facilities' of your institution?	(a) Back dated	(b) Medium		(c) Updated with modern technology	
2	Are the teachers delivered Course plan, Course materials and Digital contents in last semester?	(a) Course plan	(b) Course Materials	(c) Digital contents	(d) All	(e) None
3	Are the teachers' deliver classes with modern technology?	(a) Yes			(b) No	
4	Which of the following modern technology uses at the class?	(a) Projector	(b) Online class	(c) Blended learning	(d) None	
5	How much classes are conducted by your course teacher following class routine last semester?	(a) Below 60%	(b) 60% to 80%		(c) Above 80%	
6	What percentage of your syllabus completed before final exam of last semester?	(a) Below 60%	(b) 60% to 80%		(c) Above 80%	
7	How many percentages of practical classes conducted	(a) Below 60%	(b) 60% to 80%		(c) Above 80%	

	by your course teacher last semester?					
	<b>Roles</b>					
8	How much guide full your teachers are?	(a) Very much		(b) Guide full		(c) Not so much
9	Do you think your teachers are very much facilitating you?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
10	Do you think your teachers are effective planner and information provider?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly Disagree
11	Do you think your teachers are excellent assessor?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
12	Write down some roles of your course teachers at last year.					

	<b>Expectations</b>					
13	Do you expect that your teacher should involve maximum students at the class to make the class more effective?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
14	Do you expect that your teacher should familiarize you with modern Technology to make you more competent?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly Disagree
15	Do you expect that the teacher should take maximum classes following the class routine?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly Disagree
16	Do you expect that the Course teacher should complete the syllabus within the timeline?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly Disagree
17	Do you expect that the continuous assessment should be done before the preparatory leave of the semester?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly Disagree
18	What are the extra facilities do you expect from your course teachers for the improvement of the teaching-learning methods?					

Date:

Signature

## Appendix A2: Questionnaire

### A Survey on

### Teaching-Learning Methods: Status, Roles and Expectations to Enhance Quality in Technical Education (For Teachers)

We are coming from the research and knowledge management cell, Directorate of Technical education, Agargaon, Dhaka. We want to take information about Teaching-Learning Methods for enhancing the quality of Technical education from you which will be kept absolutely confidential and no one other than concerned people will access this information. We are grateful to you for your time and sharing information.

Do you agree with us? (i) Yes (ii) No

#### Introductory aspects

a	Name of the Department	
b	Name and contact number	
c	How many teachers in your Department?	
d	How many teachers in your Department recruited by Government?	

	<b>Status</b>					
1	Do you think your library has sufficient books?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
2	Do you think the use of modern technology will make our graduates' more skilled?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
3	Do you think supplies of Course plan; Course materials and Digital contents will make our students more qualified?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
4	Do you think your lab has sufficient instruments for your students more skilled?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
5	Do you think your experiments are updated to meet the current demand locally and globally?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
	<b>Roles</b>					
6	Do you think that you are a strong mentor for the students?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
7	Do you believe that you are an excellent facilitator for the students?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
8	Do you think you are a role model of your students?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly

						Disagree
9	Do you think you are an excellent assessor for the students?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
10	What are the roles of you to become a role model for the students?					

### Expectations

11	Do you expect that every student should practice each experiment at the practical class?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
12	Do you expect that every class should be conducted according to the class routine?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
13	Do you think the question of final examination should cover the whole syllabus for better judgment of our students?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
14	For making skilled graduates, what is your opinion about the percentages of theory and practical classes?	(a) Theory				(b) Practical
15	How much time of each graduate should spend as an industrial attachment for familiar with 4 <sup>th</sup> IR?	(a)Below 6 months		(b)6 to 12 months		(c)Above 12 months
16	What are the steps expected from the authority to enhance teaching – learning methods?					
17	What are your expectations from your students for making your class more effective?					
18	What are your suggestions for the improvement of our teaching methods to enhance quality in technical education?					

Date:

Signature

## Appendix A3: Questionnaire

### A Survey on Teaching-Learning Methods: Status, Roles and Expectations to Enhance Quality in Technical Education KII from Principals

We are coming from the research and knowledge management cell, Directorate of Technical education, Agargaon, Dhaka. We want to take information about Teaching-Learning Methods for enhancing the quality of Technical education from you which will be kept absolutely confidential and no one other than concerned people will access this information. We are grateful to you for your time and sharing information.

Are you agree with us    (i) Yes                      (ii) No

#### Introductory Aspects

a	Name of the institution	
b	Name and contact number	

	Status					
1	Do you think your institution has strong infrastructural situation?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
2	Do you think existing Government policy is enough for making our graduates qualified enough?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
3	Do you think our effort is enough for making skilled manpower? If no, then what are the lacking's of us?	(a) Yes		(b) No		
4	What is the situation of taking classes of last semester following the class routine?	(a)Below 60%	(b)60 to 80%		(c) Above 80%	
5	How many percentages of classrooms have multi-media projector?	(a)No	(b)Below 60%		(c ) Above 80%	

	<b>Roles</b>					
6	Do you think that you are a strong mentor for the students?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
7	Do you believe that you are an excellent facilitator for the students?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
8	Do you think you are a role model of your students?	(a)Strongly Agree	(b) Agree	(c)Neutral	(d) Disagree	(e) Strongly Disagree
9	Do you think you are an excellent assessor?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
10	Please write down some achievements of your students last year.					

	Expectations					
11	Do you expect that the maximum classes should follow the class routine?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
12	Do you expect that every student should operate the instruments of each practical class?	(a)Strongly Agree	(b) Agree	(c) Neutral	(d) Disagree	(e) Strongly Disagree
13	For making skilled graduates, what is your opinion about the percentages of theory and practical classes?	(a)Theory			(b)Practical	
14	How much time of each graduate should spend as an industrial attachment for familiar with 4 <sup>th</sup> IR?	(a)Below 6 months		(b)6 to 12 months		(c)Above 12 months
15	What are your expectations from your teachers for the improvement of our teaching methods to enhance quality in technical education?					
16	Please give your valuable suggestions for the improvement of our teaching methods to enhance quality in technical education.					

Date:

Signature

## Appendix B: Interview Guide

- (i) Introductory Questions
- (ii) Transition Questions
- (iii) Key Questions
- (iv) Ending Questions
- (v) Give thanks to respondents

## Appendix C: FGD Guide

### Focus Group Discussion (FGD) Checklist for Teaching-Learning Methods

#### Title: Teaching-Learning Methods: Status, Roles and Expectations to Enhance Quality in Technical Education

Date	
Category of participants	
Name of Institution/venue	
Number of participants	
Starting Time	
Ending Time	
Facilitator	
Note Taker	

### Introduction and Consent

Thank you for coming and we are grateful for your time. We have come from the research and knowledge management cell, Directorate of Technical education, Agargaon, Dhaka to conduct the research on **Teaching-Learning Methods: Status, Roles and Expectations to Enhance the Quality of Technical Education**. During this focus group discussion we want to understand your thinking on Teaching-Learning Methods for knowing the status, roles and expectations for enhancing the quality of Technical education from you.

The information you share with us will be kept absolutely confidential and no one other than concerned people will access this information. The discussion should not carry any risks or discomfort for you, except your time taken to participate. We do hope that you will participate as your opinions and experiences are very important to us. However, you are free to choose whether or not to participate in the discussion. We will take one to one and half hours for the discussion.

Do you agree with us?    (i) Yes                      (ii) No



**Participant's profile:**

Name	Designation	Department	Institute
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

**Introductory Questions:**

1. To start, could you share any recent experiences or initiatives related to teaching – learning methods of you in your institution?
2. According to your point of view, what are the objectives and goals of teaching – learning methods to enhance the quality of technical education?

**Transition Questions:**

1. From your experiences, what are the most significant strategies of teaching – learning methods to enhance the quality of our technical education? (For example)
  - Assurance of Regular attendance of all students
  - Creating Beautiful learning environment at the classroom
  - Use of course plan, lesson plans and course materials
  - Use of Digital technologies (supply of Digital contents, Projector etc.)
  - Teacher's readiness and eagerness
  - Efficiency of teachers' of related courses
2. What are the roles of a teacher for becoming a role model for the students? (For example)
  - Strong Mentor
  - Excellent facilitator
  - Expert planner

- Information provider
- Excellent assessor

### **Key Questions:**

1. What are your expectations in teaching – learning method to enhance the quality of our technical education?
2. What is the teacher student ratio in your institution? What are the problems and how can we overcome the problems of teaching –learning methods to enhance the quality of our technical education?

### **Ending Questions:**

What are your suggestions/recommendations in Teaching- learning methods for enhancing the quality of our technical education? (For example,)

- Working time at the office
- Regular classes according to class routine.
- Conducting practical classes regularly
- Consultation hour for weak students
- Student welfare advisor for each year.
- Idea of students' industrial attachment
- Assessment strategy.
- Teachers' industrial attachment.

Thank you