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GAZIPUR, BANGLADESH.



*WEB BASED EDUCATIONAL E-SUPPORT SYSTEM FOR TVE DEPARTMENT OF IUT*

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## ***DEDICATION***

I am dedicating my thesis work to my father, mother, teachers, family members and friends for their encouragement wisdom and hues assistance on the way or the other which enabled me run strongly and sharply focused throughout the entire the course.

## ***DECLARATION***

This is to certify that the work presented in this thesis is authentic and the outcome of investigation carried out by **Md Riad Hossen, Abu Rayhan and Mosaddek Hosain** under the supervision of **Tareque Mohmud Chowdhury**, Assistant professor, Department of Computer Science and Engineering (CSE), Islamic University of Technology (IUT). Gazipur, Bangladesh. It is hereby declared that this thesis/report or part of it has not been submitted elsewhere for the award of any Degree or Diploma. All literature and contributions cited are fully acknowledged.

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## **Abstract**

*This article explores how online distance learning tutors working within a higher education context may be supported in their professional development through participation. This System will provide a best communication way for teaching learning system for our academic purposes. Especially the teachers and students can able to develop a good relationship between them. Teacher can make schedule of their class and teaching related activities and student also communicate with teachers and themselves by using chatting, blogging, emailing, collecting and sharing knowledge and others facilities. There have some other facilities like Online Quiz/Class Test, Emergency Notice, and innovation through this system.*

*Student can download video tutorial, sharing class content, other educational contents/document without any cost. Student can submit their valuable opinion about the tutorials.*

## Chapter 1: Introduction

### *1.1 Overview*

Design and development of web based educational e-support system for TVE department of IUT is a web based service which will provides a great support to develop student's career and also act as an assistant of teachers. As technology have growth in 20th century, the online education, communication and commerce system that change dramatically.

Now a days, compare to the conventional education system, the students and teachers are interested on "Online education system" by getting information with a click. For sharing knowledge and making relationship with others with blogging, forum and chatting system is very popular. Without these social communication media we can't thing a single day. Video tutorial and E-book are very essential elements to learn quickly.

Now student can get distance learning opportunity to study in anywhere and anytime by their Smart phone or laptop computer. Teachers are also interested to control their teaching activities via online so that student can get information easily and instantly.

Our system provides a great opportunity to communicate with each other by Blogging and Chatting. They can share their knowledge and innovative ideas. By this system, student can also download video tutorial, E-book, and others contents.

Our system provides assistance for the teachers to manage their teaching activities/contents in teaching learning system. We want include different kinds of facilities in a single platform which will help all of us in the field of our education system.

### *1.2 Education system in TVE department*

The current education system of TVE Department of IUT is a manual system or traditional system. Classroom Learning requires a number of students to be both active listeners and participants in the learning environment. A teacher is present; the role of the teacher is to educate the students on various subjects and life skills.

After Liberation War many government and private Technical and Vocational Schools, Colleges and institutes are established for development of Technical education. One of the most famous tertiary level institute is **ICTVTR** (Islamic Centre of Technical and Vocational Training and Research) now it is known as "Islamic University of Technology" (**IUT**).

The TVE department of IUT greatly emphasis on Technical and Vocational Education. Most of the students are from OIC member state countries all over the world. Still the TVE department of IUT offered the following program:

- ❖ Diploma in Technical Education(DTE)
- ❖ Bachelor of Science in Technical Education(BSc TE)
- ❖ Masters of Science in Technical Education(MSc TE)

### ***1.3 Main objective***

The main objective of any system is that all its parts are working together for obtaining the goal. Like other systems the Web based educational e-support system has a central objective and this is website help to learning, content share, give assistance to the student and teachers, student admission process etc. The central objective of this system is to share knowledge, content and assistance for teacher and student's in well-designed way. All the parts of the system is working together to achieve the goal of the system.

The Administrator has the control over all users of the system. He has the ability to perform various operations like creating user account, performing functions like add or delete courses, and even updating some other information about users'. The administrator has also the privileges to close the user account on the request of the users. The users should be able to access his/her account from anywhere just by providing the correct user-id and password

### ***1.4 Web Based Educational E- support system***

The main objective of this project is to develop an e-learning system for TVE Department that provides facility for users (teachers, students, and learners) to access materials online in an easier way. Learning material can be uploaded by the administrator and downloaded by users when their authentication [User id and password] matches. The e-IUT supports browsing of resource materials, learning of educational information, providing syllabus and assignments, announcement of quizzes and exam results etc.

The web based e- learning solution and administration system allows the students and teacher to access site and browses through different tutorials, discussion in blog posts. And using Web based e- learning solution and administration they can share educational content and make a discussion with blog comment and teacher can upload lecture and make notice for the student and marks also.

## **Chapter 2: System Analysis**

### ***2.1 Introduction***

In the systems development life cycle (SDLC), the fundamental phases are planning, analysis, design, and implementation which is common to all information systems development projects. It describes the evolution of system development methodologies and discusses the roles and skills required of a systems analyst.

The central purpose of systems analysis is to help private decision makers and public policymakers resolve the problems that they face in the short, medium, and long term. The problems we address are large scale socio-technical problems—problems affecting the future of the human race, problems of immensity, complexity, and urgency that to neglect a single aspect could be very costly, and not just in monetary terms.

### ***2.2 The current system***

The current education system of IUT TVE Department is a manual system or traditional system. Classroom Learning requires a number of students to be both active listeners and participants in the learning environment. A teacher is present; the role of the teacher is to educate the students on various subjects and life skills.

Classroom learning allows for many different types of learning, such as, lectures, debates, labs, tutorials, and question/response discussions, but the question of which method yields the most possible learning is one that has been debated extensively throughout the history of education. The most practiced method is often referred to as the ‘traditional’ system, which is the model for most universities and schools as well.

This system is not the most effective in terms of resulting in actual learning and has many disadvantages that are actually counterproductive to real learning. The traditional educational system focuses entirely on intellectual and ignores experiential learning, teaches students how to succeed on standardized tests and not much more, has an authoritarian nature, and leads students to only extrinsically value education and not intrinsically value learning.

The traditional educational system relies almost entirely on intellectual learning without including experiential learning. This style of learning is intended to allow students to gain an individual meaning to the subject matter.

### ***2.3 Problems of the current system***

Since class sizes are usually fairly large and there is only one instructor, passive learning may take place. When shy students feel a lack of confidence, they often do not respond to questions they may have the answer to. The more vocal students might dominate the mass of classroom discussion.

Also forcing shy students to have problems grasping higher order learning skills and critical thinking.

- ❖ The cost of study will be high and expensive where the student needs a lot of stuff such as daily.
- ❖ Transportation school tuition fee and many more.
- ❖ The learning time will be high.
- ❖ Less self-pacing.
- ❖ Less confidence.

## ***2.4 Problems Statement***

Web based educational E-support system is a computerized web based system which can help user (students and teachers) to manage the activities in electronic format. It reduces the risk of paper work such as file lost, file damaged and time-consuming. It can help user to manage the transaction or record more effectively and efficiently and also help us to save our time.

**The problem occurred before having computerized system includes:**

### **2.4.1 Communication difficulties**

Because of using the traditional method, it was really difficult to communicate between student and teacher in a teaching-learning situation.

### **2.4.2 Traditional admission system**

Because of using the traditional method of admission, student had to face a lot of difficulties. They can't procure their admission related document through online. So they had to come IUT campus to procure their admission process.

### **2.4.3 Alumni information**

Before making the web based educational E-support system we don't had any record related to the graduate students those who completed graduation before.

### **2.4.4 Research facilities information**

In our previous existing system, there was not available information related to the research facilities. So they are getting confused on it.

### **2.4.5 Lecture collection**

We don't had a reliable source where teacher and student can share their class content and assignment delivery. Here FTP facility is available but it does not ensure the security and some time it becomes useless.

### **2.4.6 Reliable source of information**

We didn't have any admission circulation like other department and students are become confused about the vacancies and other related information about this TVE department.

### **2.4.7 File lost**

When no computerized system is implemented, the file always lost because of human and environment.

#### **2.4.8 Difficult to search record**

Without computerized system, when member wants to know about faculties, departmental process, student info etc. was really difficult to find. And it was also a cause of time-consuming.

#### **2.4.9 Difficult to view reports**

Report need to generate manually without computerizes system. Admin need to get the book transaction record and find the information based on the time period. It is time consuming to generate one report.

#### **2.4.10 Cost consuming**

Paper is needed add every new record. After a long period of time, the cost to buy a paper can be high.

### ***2.5 Solution outline:***

The solution of the current system is to design and develop a system which enables people to learn any time anywhere and can include training and delivery of just in time by using computers and web technology.

- ❖ First, we marshal all the information and scientific knowledge available on the problem in question; if necessary, we gather new evidence and develop new knowledge.
- ❖ Second, we determine what the goals of the stakeholders are, both of the people and the institutions.
- ❖ Third, we explore different alternative ways of achieving those goals, and we design or invent new options, where appropriate.
- ❖ Fourth, we reconsider the problem in light of the knowledge accumulated.
- ❖ Fifth, we estimate the impacts of the various possible courses of action, taking into account the uncertain future and the organizational structures that are required to implement our proposals.
- ❖ Sixth, we compare the alternatives by making a detailed assessment of possible impacts and consequences.
- ❖ Seventh, we present the results of the study in a framework that facilitates choice by the stakeholders.
- ❖ Eighth, we provide follow-up assistance.
- ❖ Ninth, we evaluate the results.

Please note that computer modeling is a useful device in helping obtain answers at any of the above stages.

## ***2.6 Goals and Objectives of the thesis work***

### **2.6.1 Project Goals and Objectives**

- ❖ To **develop a website** in which allows and enables the students of IUT to learn anywhere, any time.
- ❖ To ensure that students have access to **course materials** containing the underpinning theory of the programmed in a variety of ways at times and locations appropriate to their own situation.
- ❖ To enable students to see the structure and **inter-relationships** between different topics, by breaking the content down into small units with the corresponding outcomes and reflective tutorial exercises embedded alongside the content.
- ❖ To **address the problems** posed by the distributed locations of the students, in respect of traditional mechanisms of undertaking tutorials and providing feedback.
- ❖ To assess **the students'** ability to apply the subject matter
- ❖ To enable rapid **feedback** from tutors on their submissions by means of online tutorials and discussion.
- ❖ To enable students to **demonstrate** their understanding of the fundamental principles behind each (assessed) topic area, and thus demonstrate attainment of the module learning outcomes.
- ❖ To enable students (who are located in all parts of the world) **to share and discuss** ideas and concerns with each other, through use of the discussion boards.
- ❖ To stretch students further and enable them to gain a deeper understanding of the subject matter and thus demonstrate higher order skills associated with a postgraduate programmed and hence reach their full potential.

## ***2.7 Evaluation of objective***

The objective this project is to develop a system to manage the course with the following objective:

- ❖ General objective
- ❖ Qualitative objective
- ❖ Quantitative objective



### **2.7.1 General objective**

General objectives are as follows:

- ❖ Admin Log in
- ❖ Teacher registration
- ❖ Course registration
- ❖ Student registration
- ❖ Communicating
- ❖ Delete teacher
- ❖ Delete student
- ❖ Delete course
- ❖ Teacher login
- ❖ Add lecture
- ❖ Announce assignment
- ❖ Updating profile
- ❖ Student login
- ❖ Download course lecture
- ❖ Submitting assignment

### **2.7.2 Qualitative Objective**

The qualitative objective of electronic course management system is as follows:

- ❖ Keep up with technical change
- ❖ Increase communication among students
- ❖ Save time
- ❖ Respond to student requests or interest immediately
- ❖ Learn more about online course development
- ❖ The system should store detail of all courses which is teaching by all department of the university.
- ❖ The system should eliminate manual collection of course material from teacher by student.
- ❖ The system should automatically prevent and deny illegal access or unfair mean by the user.
- ❖ The new updating in the course material or any other information should be reach fast to the user.
- ❖ Every part of the Electronic course management system must be accessible for all level of users with minimum time delay.
- ❖ The user should be able to enter the system submit assignment and download and view the course information and material.
- ❖ The system should have an attractive and user friendly interface for it is all level users.
- ❖ All the above should be clear and easy to do and manage the courses.
- ❖ E-Learning system of IUT.

### **2.7.3 Quantitative Objective**

The quantitative objectives of the electronic course management system are as follows:

- ❖ The system should be able to store the course detail of 5 or more different department of the university.
- ❖ The system should be able to hold at least 5 year of course material uploaded by the teacher and give them chance to update particular course.
- ❖ The current uploaded material should be identified by the new teacher when he is taking the subject for the first time within a minute.
- ❖ The student sending material like assignment should be related and accessible for the teacher with in short time. The user of the system should use the course management system in one week without further help.

### **2.8 Project Vision**

In this section we will discuss about our project goal and vision, scope of project, interaction, integration, facilities of the project, and limitations of the project and so on.

Web based educational e-support system is very popular and demandable for every student and teacher in teaching-learning process everywhere in the world. Student and teacher always want to communicate with each other via online. Now also android application is very familiar in the modern world. Teacher always want to do their teaching activities with help of such android application.

To overcome present system's problems and provide an effective web based educational e-support system where student and teacher can interact easily and share resource without facing any difficulties. We have mentioned some vision and aim of our project.

- ❖ Make a common web based e-learning platform for all students and teacher of TVE department of IUT.
- ❖ Make a web based system for teacher and student to convert all paper works to digital web based system. Where teacher and student will not need to do their activities with conventional paper system. They just made one time and can use it multiple times.
- ❖ Make a common resource sharing system for TVE students on educational purpose.
- ❖ Ensure data security of educational contents.
- ❖ Ensure online help from different student and teacher for educational purpose.
- ❖ Make platform for student where they can show their educational project for showcasing which will be his future reference.

## ***2.9 Features of Our project***

Our system offers some facilities for students and teacher. For better communication between teacher and student these feature will be very helpful. Some are given below:

- ❖ Blog System
- ❖ Tutorial upload / download system
- ❖ Teacher assistant system where teacher can give marks, notice, upload class content
- ❖ Alumni information
- ❖ Online Student Admission System
- ❖ Faculty Information
- ❖ Research publications

## ***2.10 Scope of Our Project***

- ❖ To make a good relationship with teacher and student by resource sharing.
- ❖ To provide a user friendly online learning system for teacher and student where student and teacher can upload and download different type of class contents.
- ❖ To provide a common and specific platform for TVE department student and teacher for explore knowledge and discuss themselves via blog system.
- ❖ Make an Android application for Teacher assistant system where teacher can make important notice and submit marks for student with using android smart phone. Students also get notice and their marks via android application with android smart phone.

## ***2.11 About Web based e-learning and Distance learning system***

E-learning, Web-based learning, online learning, and distance learning are widely used as interchangeable terms. E-learning and Web-based learning are examples of recent concepts that acquire their meanings from the related concepts of e-mail, Web, and learning. Other concepts are derived by shading their meanings with aggregated adjectives. Online learning and distance learning obtain their meanings this way, as it does Web-based learning.

Definitions for distance learning and distance education have been proposed by Keegan (1986) and Garrison & Shale (1987). Khan (2001) and Hall (1997) associate Web-based learning with Web browser technology, often delivered via the Internet or intranets. Much literature associates e-learning with Web-based learning over the Internet. Schank (2001) refers to learning activities involving computer networks as e-learning, and stresses that e-learning is not merely distance

learning.

The concept of online learning predates the appearance of the Web, but most recent publications about online learning refer to materials delivered over the Internet or intranets.

E-learning is mostly associated with activities involving computers and interactive networks simultaneously. The computer does not need to be the central element of the activity or provide learning content. However, the computer and the network must hold a significant involvement in the learning activity.

Web-based learning is associated with learning materials delivered in a Web browser, including when the materials are packaged on CD-ROM or other media.

Online learning is associated with content readily accessible on a computer. The content may be on the Web or the Internet, or simply installed on a CD-ROM or the computer hard disk.

Distance learning involves interaction at a distance between instructor and learners, and enables timely instructor reaction to learners. Simply posting or broadcasting learning materials to learners is not distance learning. Instructors must be involved in receiving feedback from learners.

For each of these concepts, the discriminating feature must be the primary characteristic of the learning activity. For instance, running a CBT application from a file-server does not qualify as e-learning; and e-mailing a teacher after taking a class on a campus is not sufficient to qualify as distance learning.

### **2.11.1 Advantages of web based e-learning system**

There are many advantages of web based e-learning system. Any person can learn without any boundary of place, time and teacher. Some of are given below:

- ❖ Access content from Anywhere any time
- ❖ Free access
- ❖ Save time and reducing paper work
- ❖ Ensure security
- ❖ Effectiveness and efficiency
- ❖ Easy Communication with world community
- ❖ Long life education
- ❖ No need big books

### **2.11.2 Limitation of web based e-learning system**

There is lot of facilities in e-learning system but also some limitations also. Some are technical and some are non-technical limitations. These limitations are discussed below.

### **2.11.2.1 Technical limitation**

- ❖ Lack of universally accepted standards quality, security and reliability
- ❖ Telecommunication bandwidth is insufficient (Content sharing system)
- ❖ Software development tools are still evolving.
- ❖ Difficulties in integrating the internet and content sharing website like web based
- ❖ E-learning and teacher assistant.
- ❖ Applications and databases.
- ❖ Special web servers are needed in addition to the network servers (added cost).

### **2.11.2.2 Non-technical limitation**

- ❖ Security and privacy may be sometime problem.
- ❖ Sometime people are not interested to learn from web sites and don't want to share
- ❖ Tutorial but the situation is changing.
- ❖ There is no instant question answer to learn from web based e-learning system and teacher assistant system.
- ❖ People do not like to learn come physically in the school or to the teacher every time.

## Chapter 3: Feasibility Study

### 3.1 Introduction

In this chapter we will discuss about feasibility study of our system. We will discuss technical and economic feasibility study and so on.

### 3.2 Feasibility study

The objective of the feasibility study is to determine whether the proposed system is feasible or not. It help to know what are the requirements we need and which are the appropriate sector for this system and what are the problems and set minimum cost for this system.

#### 3.2.1 Technical feasibility

The technical feasibility of our project is determining that weather the technology is available or not. Our current technical resources are enough to develop the project or not. We need some **hardware**: Minimum Dual core machine, printer, scanner, ups.

**Software**: XAMPP or WAMP with PHP and MySQL server, Dream weaver, Notepad/sublime Text2, MS word, PowerPoint, for front end, backend, report and analysis and presentation.

#### 3.2.2 Economic feasibility

Economical issue is most important part of a system. We have done Cost analysis for our system to give a best system for our TVET system which is originally cost effective and available for every user. Some cost related analysis is given bellow.

- ❖ Cost of equipment such as computer and networking.
- ❖ Cost of resources such as software development cost.
- ❖ Cost of programmers' time.
- ❖ Cost of other cost (analysis of existing system cost).

### Estimated system cost:

All Items	Cost (Tk)
Intel 4460 Core i5 4th Gen. Processor, Product Model: Intel i5-4460.	₳ 14,500
Gigabyte GA-H81M-S2PH with HDMI 4TH Gen. LGA1150 Socket Mainboard.	₳ 5,100
HDD-Samsung 500 GB	₳ 7,500
Monitor-17''samsung	₳ 8,500
RAM Apacer 4 GB	₳ 3,500
Computer Casing ATX 500~1000W	₳ 3,500
Optical Mouse Cable Connectors	₳ 700
Keyboard wired	₳ 700
DVD ROM - Sony	₳ 2,200
Printer—HP Laser jet 1102	₳ 7,500
Computer software (XAMPP or WAMP with PHP and MySQL server, Dream weaver/ Notepad/sublime Text2,MS word and PowerPoint)	₳ 20,000
Bandwidth coast	₳ 1,000
Computer operator	₳ 500
Domain and Hosting cost per year	₳ 1,000
Maintenance and others	₳ 5,000
<b>Total Cost</b>	<b>₳ 81,200</b>

Table 1: Estimated system cost

### 3.2.3 Operational feasibility

The operational feasibility is belonging to the following people involve system.

#### Administrative:

In our system there is a system administrator. Some of the administrative users are the teachers and they can manage some authentication for some specific group of students. In Teacher assistant part teacher is the main authority to distribute notice, lecture, marks and other for the specific group of students.

**Users:**

The People who interact with our web based e-learning solution and administration system are two types: first those who are teachers they have an account and they can distribute notice, lecture, marks and others for specific group of students and second those who are just visiting the site specific group of students and they have an account. They can share information through the blog and tutorial. They can take the academic notices, exam marks, lecture contents and other information by using teacher assistant.

**Identifying Training need for the administrative and other users**

Our site is user friendly and there is no need for the users to be trained. About administrative activities and other users activities details are given in this site as training. This note is enough for maintaining the system.



## Chapter 4: System Design

### 4.1 General Description

The design phase comes after a good understanding of customer's requirements; this phase defines the elements of a system, the components, the security level, modules, architecture and the different interfaces and type of data that goes through the system.

A general system design can be done with a pen and a piece of paper to determine how the system will look like and how it will function, and then a detailed and expanded system design is produced and it will meet all functional and technical requirements, logically and physically.

### 4.2 Goal of the project

The main goal of our project is to implement a web based educational e-support system for TVE department that described in below:

#### 4.2.1 User Activities

- ❖ **User registration:** Teachers and students coming to this site to create a profile as a teacher or student and give their academic information via filling registration form. The information of users will be stored in a secured database. All users can log in by using their username and password that they will get the Privilege according to their access level set by the authority and can facilitate from this site.
- ❖ **Updating profile:** A users can update their profile. They can change their personal information
- ❖ **Write blog:** Every user of this site can write blog related to technology and science and also share their experiences.
- ❖ **Comment:** Student can ask question according to their problem and any one can answer or suggest for this question by using “comment system”.
- ❖ **Download lecture:** Students can download lectures which are given for their group.
- ❖ **Get Notice:** Student can also get the emergency notice form this side.
- ❖ **E-Books Collection:** Student can collect the necessary E-Books from the book store.

#### **4.2.2 E-learning activities**

- ❖ **Upload lecture:** Teacher can upload their lecture via our system for specific group of students.
- ❖ **Make notice:** For any emergency or any kind of notice teacher can publish to the specific group of students.
- ❖ **Mark distribution:** Teacher can entry and distribute their Quiz/Exam marks.
- ❖ **Upload tutorial and download:** Student or teacher anyone can write tutorial for the students of different subjects. And anyone can also download these.
- ❖ **Online Quiz:** Teacher can take online quiz from the students by simply making some MCQ type questions that will generate the result automatically.

#### **4.2.3 On-line Admission**

This Admission System will provide the online admission circulation, online form fill-up, and result publication.

#### **4.2.4 Research**

Research activities like field or area of research, Journal publications and available research facilities will be included in this context.

#### **4.2.5 Alumni information**

This section will contain the information of the previous graduate students with their basic contact information. Like Name, specialization, Passing Year, E-mail, Current working Sector and so on.

#### **4.2.6 Image Gallery**

That will manage our photos on our website. With Gallery we can easily create and maintain albums of photos via an intuitive interface.

#### **4.2.7 FAQ (Frequently Asked Questions)**

Frequently asked questions (FAQ) or Questions and Answers (Q&A), are list of questions and answers, all supposed to be commonly asked in some context, and pertaining to a particular topic.

#### **4.2.8 Forum:**

An **Internet forum**, or **message board**, is an online discussion site where people can hold conversations in the form of posted messages. They differ from chat rooms in that messages are often longer than one line of text, and are at least temporarily archived. Also, depending on the

access level of a user or the forum set-up, a posted message might need to be approved by a moderator before it becomes visible.

A discussion forum is hierarchical or tree-like in structure: a forum can contain a number of sub-forums, each of which may have several topics. Within a forum's topic, each new discussion started is called a thread, and can be replied to by as many people as so wish.

Depending on the forum's settings, users can be anonymous or have to register with the forum and then subsequently log in in order to post messages. On most forums, users do not have to log in to read existing messages.

### ***4.3 Interaction of the project***

Interaction refers to the manner in which each component function with other component of the system. It is actually the link between different parts of the system. In web based e- learning and teacher assistant system there is huge interaction with the teachers and students.

After registration a teacher can write blog with different topics, update their post and also delete posts, which are related with TVET curriculum. He/she can also write specific tutorial with any subject and also update and delete these content.

As a Super Admin: A super admin can, registration (like faculty, Staff, alumni), User control (like User activation, Edit, Delete), show active user list etc by using our system.

As a head of the department: he can registration (faculties and staffs), user activation (register user activate and deactivate), see active user list, courses allocation (give a particular course to a teacher and also see how many courses has been given each of the teacher) etc.

As a Secretary: A secretary can activate the registered student, alumni registration, important notice publication, class or exam routine uploads etc. By using this system he can acting as a admin.

As a teacher/faculty member: A teacher can use Teacher assistant facilities from our system. By using this Teaching assistant he/she can upload important notice like Quiz date, syllabus, marks, and Class cancellation and upload lectures content and give a solution if any problem arises.

As a student/others: After registration as a student he /she can write blog with different topics update their post which related with TVET curriculum. He/she can also write tutorial with any subject and also update and delete these. They can see their notice and different exam mark also.

## ***4.4 Elements of the project***

The web based e- learning solution and administration system has element just like the other systems. They are:

- ❖ Input/output
- ❖ Process
- ❖ Control
- ❖ Feedback
- ❖ Environment
- ❖ Boundaries and interface

The elements of the web based e- learning solution and administration system are discussed briefly as follows.

### **4.4.1 Input and Output**

The inputs are the elements that enter the system for processing, and output is the outcomes of the system. Processing a system feeds on input to produce an output in much the same way that a business bring in human to produce goods and services from the raw inputs. In web based e- learning solution and administration system, the input of the system are students and teachers specific information like full name, institute name, department, semester, roll etc. For blog part the input is post title post content with picture, video and with text styling. For Tutorial part input is title of tutorial, text or video. The outputs of our system are user profile, user post for blog, user post for tutorial, file download links, notice, student marks, and admission process.

### **4.4.2 Process**

Process is the operation of the system that involves the actual information of input in to output of the system. The processor process the input element to desired output. In some cases the input is modified to enable processor to handle the transformation. The process operation finishes output information stored in database or in files.

For example: after completing register as a teacher can input student's mark and after processing, a student can see the result or as a input write a post for blog or tutorial after processing any one can read these posts.

### **4.4.3 Control**

The control guides the system that how can it works well. It is the decision making subsystem that controls the activities of input, process and output. According to the control element the welfare of the business effect all the organization environment. The control element controls the flow of data as well as it controls interaction between different levels. Without the authority the system has no guidance actually. The authority does the job for the system.

Here for blog and tutorial system teachers and students are authorities for managing blog writing, deleting, updating and other operation. For teacher assistant teachers are the authorities of distributing marks for specific group of students, published notices, uploading lectures and other processes.

Similarly the administrative person (like Super admin, Head admin, Secretary) each of them has an individual privilege over the system.

#### **4.4.4 Feedback**

Output information is a feedback for input or process section. Control in a dynamic system which is achieved by feedback. Feedback may be positive that reinforce the good performance of the system and negative feedback generally provides some information for action. This feedback often results in enhancement to meet the user's requirement. For example: Feedback of an web based e- learning solution and administration system is to distribute marks, comment system in blog and reporting about popularity of an blog and opinion about project showcasing from the users to publisher in a successful manner that taking the response from users that service was transferred in a safe mode to the target users.

#### **4.4.5 Environment**

Environment is the source of the external element that impinges on the system. In fact it often determines how system must function. The organizational environment is consisting of students, teacher and other users. In web based e- learning solution and administration system, registration of teacher or student, write post for blog or tutorial, comments on other posts, upload and download lecture, mark distribution is environment of the system.

#### **4.4.6 Boundary and Interface**

A system can be defined well by its boundaries. Boundaries are the limits of the system that identify its components, processes and inter-relationships when interfaces with other systems. Boundaries and interfaces give the idea about the working area of the system. To write a post or make notice or see students notice user must complete their registration in these web sites. If anyone has no registration then he/she can visit only posts of blog and tutorial.

### ***4.5 Functional requirements***

Functional requirements define the functions that are requested by our stakeholder. Different functions are needed by different system users. In our system we have two types of members who have an account and they are registered persons in our database. Once a member login the system, he or she can write post for blog and download and upload the tutorial and class lecture contents.

Besides, administrator people can maintain and control the system. The system can identify the authority of an administrator after he login.

#### 4.5.1 Functional requirements for teacher

There are some functional requirements for teacher which are very important for our project.

- ❖ Login
- ❖ write post
- ❖ Change of password
- ❖ Change of personal information
- ❖ Upload and download contents
- ❖ Make notices
- ❖ Update and delete contents
- ❖ Input marks etc.

#### 4.5.2 Functional requirements for students

There are some functional requirements for student which are very important for our project.

- ❖ Login
- ❖ Write post
- ❖ Change of password
- ❖ Change of personal information
- ❖ Download the contents
- ❖ Discussing about a particular lecture
- ❖ Comment, sharing knowledge, Question-Answer session etc.

#### 4.5.3 Functional requirements for Super admin

There are some functional requirements for admin which are very important for our project.

- ❖ Login
- ❖ Write post
- ❖ Change of password
- ❖ Change of personal information
- ❖ Read and update all post and tutorial
- ❖ Remove any unnecessary posts
- ❖ Mange the whole system
- ❖ **Registration:** Faculty, Staff, Alumni
- ❖ **User control:** Activation, Update, Delete of Head Admin, Faculties, Secretary, Staff, Student, Alumni etc.
- ❖ **Active User:** To view the current registered users in the system.

#### 4.6 Non-functional requirements

Non-functional requirements define the operational requirements and project schedule that are requested by our stake holder. In our system there are some parts like tutorial, blog, teacher assistant. We describe our system within two separate E-R diagrams.

##### 4.6.1 E-R diagram of Teacher Assistant.

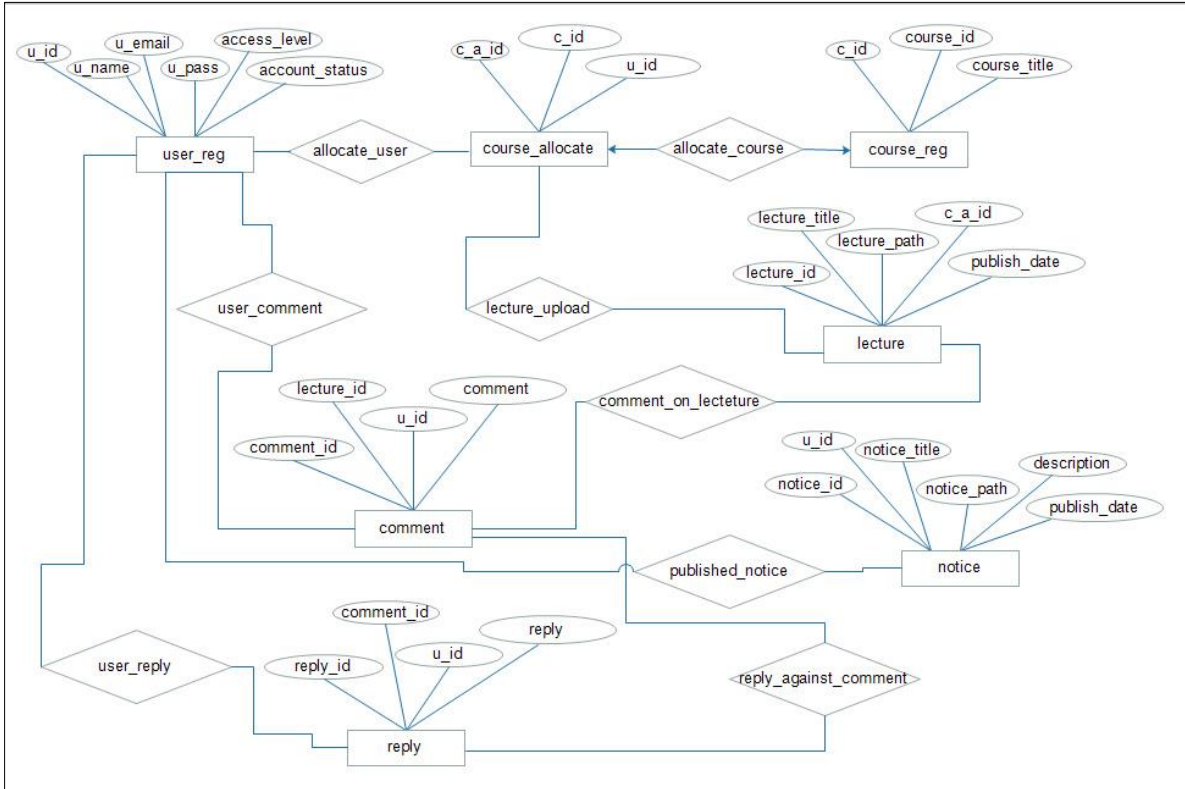


Figure 1: Teacher Assistant System

## 4.6.2 E-R diagram of E—learning section

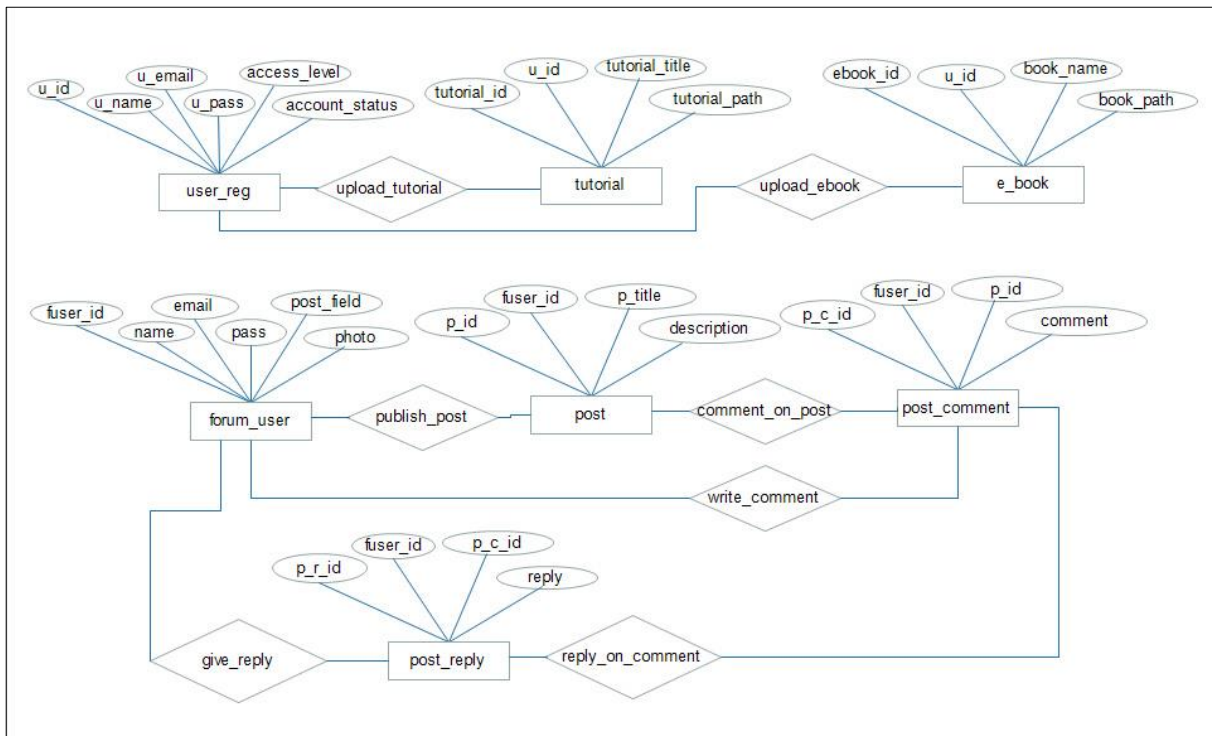


Figure 2: E-R Diagram for E-learning

## 4.4 Activity Diagram

Activity diagram describe our all project overview. There are two type of user in our system.

- ❖ **Unregister user:** Unregister user can just visit all tutorials and blog posts and can read all of posts. But who are register user in our system they can do many things.
- ❖ **Register user:** For register there are two options. Sign up as student and sign up as teacher.

If anyone registers as student and he/she login in our system then he can write post for blog, can change their personal information and see profile. They can write text tutorial, upload tutorial file (audio and video), they can also see notice from teacher, download lecture and see their marks in different examination.





## Chapter 5: Implementation

### 5.1 Introduction

In our implementation section, we present our web based educational e-support system provides the functions for users, visitors, the functions for Administrators and the system printouts.

### 5.2 Operational requirements (Tools)

- ❖ The system can be viewed by Microsoft Internet Explorer, Mozilla Firefox, Opera, Google chrome, Safari etc.
- ❖ MySQL to develop the database of our system.

The development of system had completed by the end of 10<sup>th</sup> October 2016.

The mitigation testing and final user acceptance testing is scheduled at the end of October 2016.

This project is not for business purpose, rather is developed for academic purpose.

#### 5.2.1 Software and hardware requirements for developers

During our system development, we have to design both static and dynamic website interfaces, create website functions and a database system, edit photos and pictures, and print out reports, so it has a set of software and hardware requirements.

#### Software requirements

There are some software requirements we have used for our project. Every software and tools provide different facilities for completing our project successfully.

- ❖ Notepad++ /Sublime Text2/Net Beans IDE 8.0.1
- ❖ Photoshop CS8
- ❖ Xampp/Wamp Server
- ❖ Microsoft Word
- ❖ Web browsers

#### Hardware requirements

There are some hardware requirements we have used for our project. Every hardware and tools provide different facilities for completing our project successfully.

- ❖ CPU – Intel Core 2 Duo
- ❖ RAM – 2 GB
- ❖ Hard disk – 320 GB
- ❖ Operating System – Windows 8.1/10

#### 5.2.2 Software and hardware requirements for system users

The following is the requirements for the system users including members and administrators.

## Software requirements

Browser software is very helpful for the users to operate our system. Some browser software is given below.

**Web Browsers:** Microsoft Internet Explorer, Mozilla Firefox, Opera, Google chrome, Safari.

## Hardware requirements

Without hardware our system user cannot do any works over our system. Hardware requirements are first requirements for using our system properly.

- ❖ CPU – Minimum Intel Dual core processor
- ❖ RAM – 1 GB
- ❖ Hard disk – 160 GB
- ❖ Operating System – Windows 7 or Windows 8.1

## 53 Home page

In home page of our project we have a slider with some sliding picture and information. We have a sticky menu bar. In this menu a visitor can visit our blogs, tutorials, showcased project and contact with us. There is a sidebar with login area and with sign up area. If anyone has not a user name password yet then he/ she can do registration as a teacher or as a student.

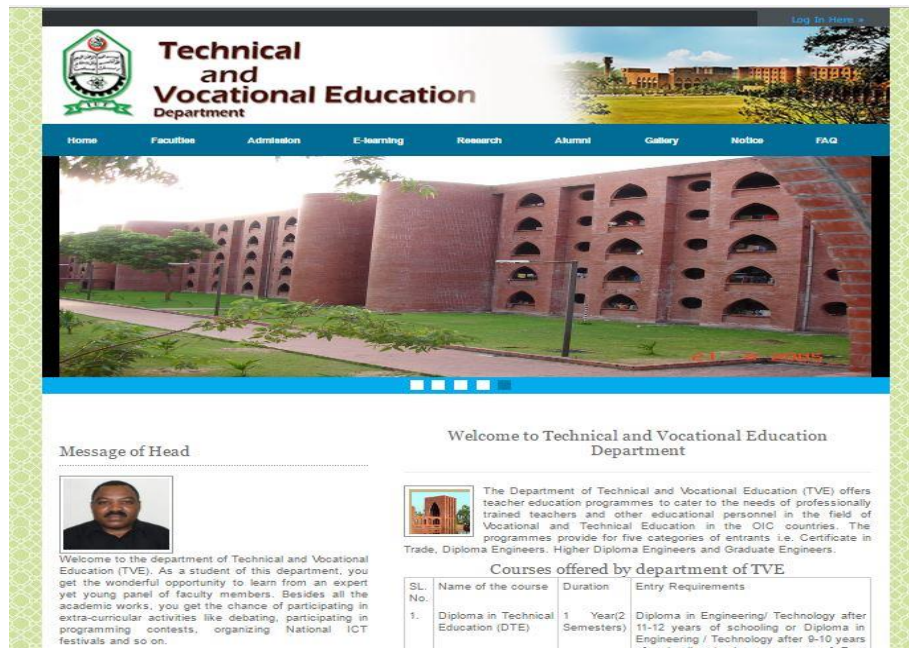


Figure 5: Project Home Page

In footer we have some information and quick links like menu items and some short links. Here is the picture of our home page.

### **5.3.1 Functionalities of users, visitors and administrators**

Every system has some actors who interact with the system. In our system there are some actors who have performed some functionality with our system. Registered users are teachers, students and administrators. Normal visitors also visit our system for increasing their knowledge. Some functionality of users, visitors and administrator are given bellow.

#### **5.3.1.1 User functions**

Any register user can write blog post, delete and update his/her post. He/she can also write comment to others posts. They can upload tutorial, download tutorial, write tutorial, delete or update own tutorial. He/she can download lecture, see marks of different examinations and get notice from teacher.

#### **5.3.1.2. Visitor functions**

Any visitor can read our content like blog post, text tutorial, watch video tutorial, can see all projects which has showcased already.

#### **5.3.1.3 Administrator functions**

An administration can delete any unrelated post or tutorial, can block any user.

### **5.3.2 Registration**

There are two types of registration provided by our system.

- ❖ Registration as a teacher
- ❖ Registration as a student

#### **5.3.2.1 Registration as a teacher**

To get more access in our web based e-learning and teacher assistant system user as a teacher have to registration with appropriate information. By this information he/she can identify themselves and can access in different part of service in our system like tutorial, blog, project showcasing, teacher assistant and so on.

For registration as a teacher, he or she has to give his/her name, institute, department, email address, user name, and password and profile picture. Here is the picture of registration form for teacher.



Figure 6: Faculty Panel

### 5.3.2.2 Registration as a student

To get more access in our web based e-learning and teacher assistant system user as a student have to registration with appropriate information. By this information he/she can identify themselves and can access in different part of service in our system like tutorial, blog, project showcasing, teacher assistant and so on.

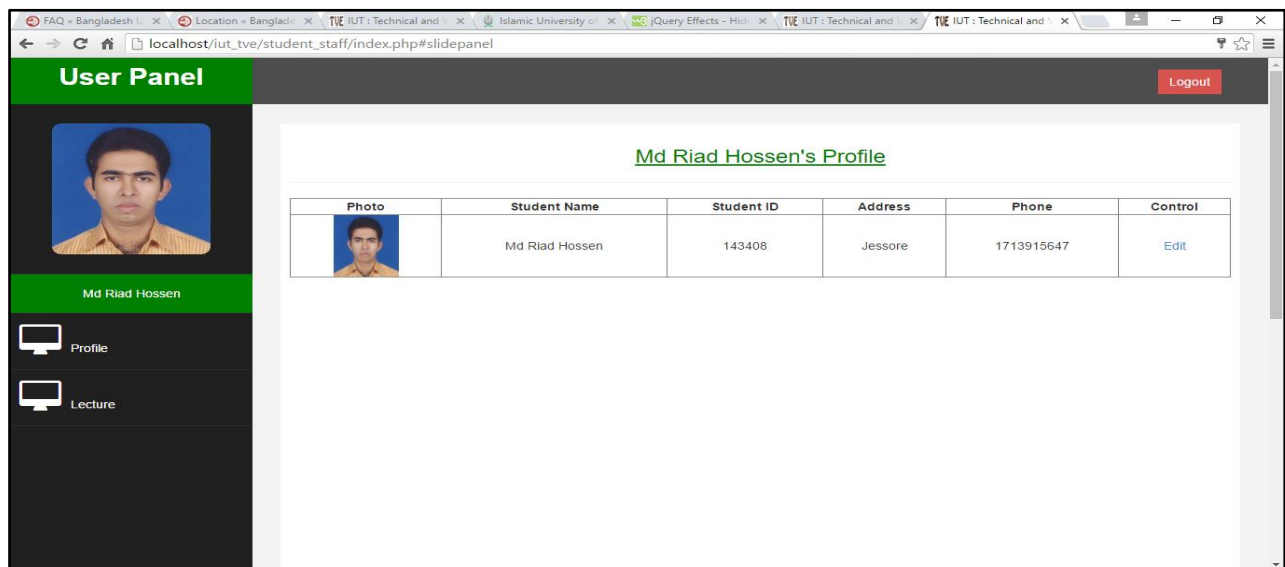


Figure 7: Student Page

For registration as student, he or she has to give his/her name, Roll no, semester, institute, department, email address, user name, and password and profile picture. Here is the picture of registration form for student.

### 5.3.3 Data validation in browser

Every field is required here. If anyone tries to do registration without this information he can't, our system will not allow him/her. He will get some error message that what information he is missing. By this way the system guide user as a teacher to put right information what the system desire from users.

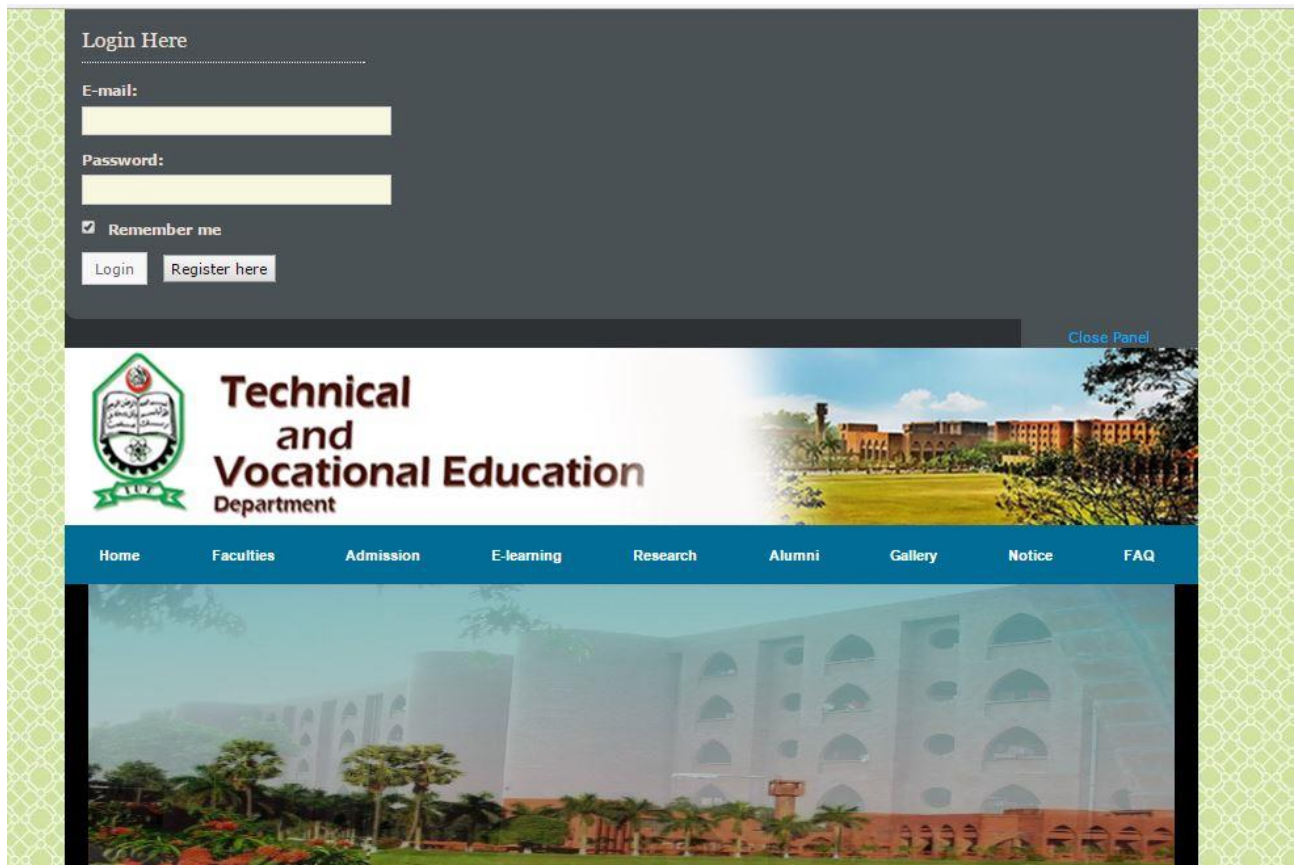


Figure 8: Login for the users

### 5.3.4 Register users

When a register user login he/she can see his/her all posts, all tutorials, and notice if any notice is published for him or her from teacher assistant system. They can also see their profile with all information when register. If they want to modify they can do it.

## 5.4 *Faculties Panel*

This section will contain the detail information of acting Faculties member like their personal information, Educational Information, Thesis and Publications, Contacts and other skills related t



their specialization. The Faculty will be like below

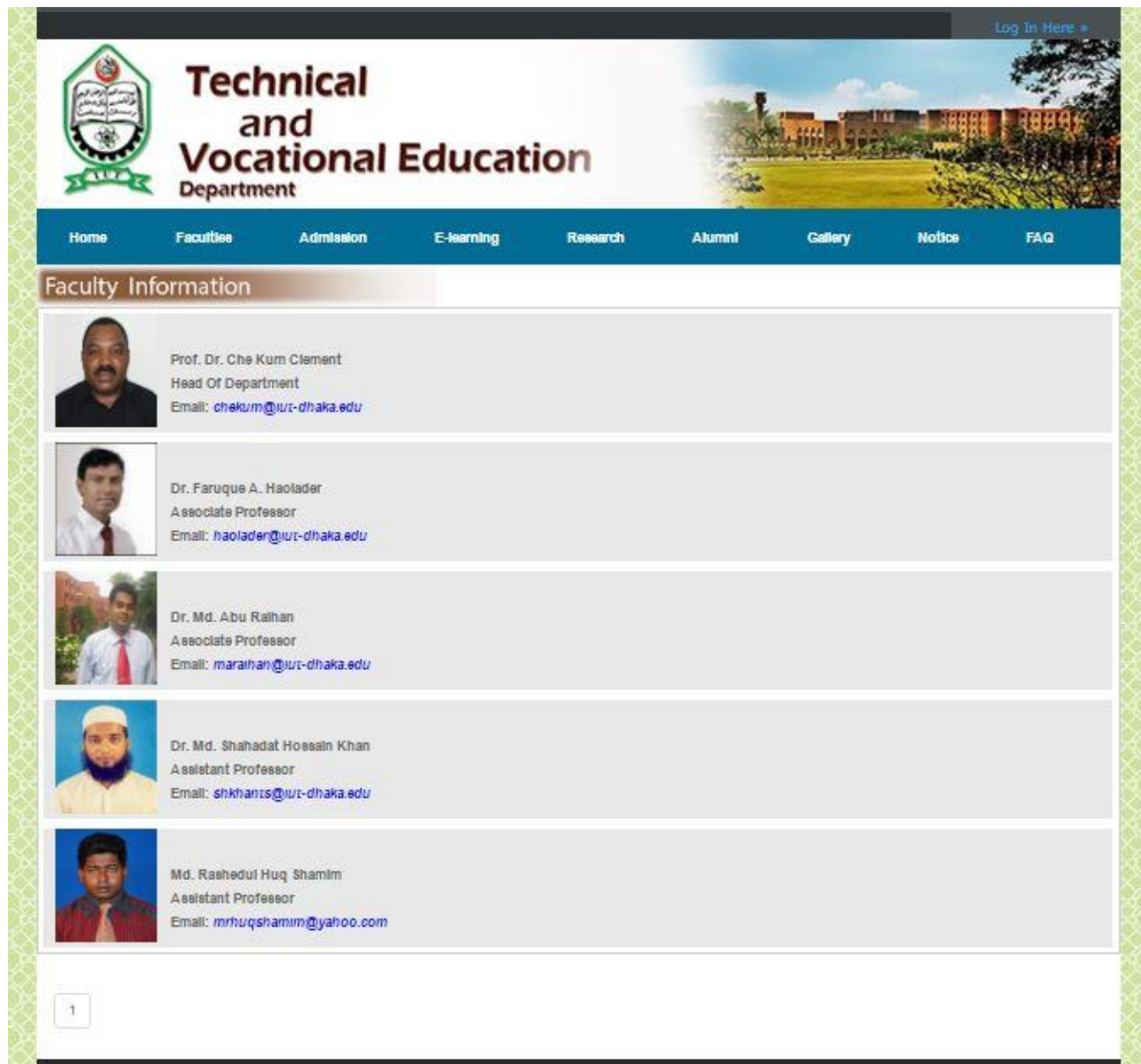


Figure 9: Faculty Members

### 5.5 Online Application Form

The online Application form will be available for the prospective students from the members states of OIC to apply directly online. It will help them to save money, effort and time. This system is a automated system. The figure of online application is given below

Log In Here >

# Technical and Vocational Education Department

Home
Faculties
Admission
E-learning
Research
Alumni
Gallery
Notice
FAQ

Admission  
Info
Application  
Form

## APPLICATION FOR ADMISSION TO B.Sc.T.E. and DTE Program (Technical Education Programmes)

### ACADEMIC YEAR 2016-2017

1. Name of the Student	<input style="width: 90%;" type="text"/>
2.(a) Father's Name	<input style="width: 90%;" type="text"/>
(b) Mother's Name	<input style="width: 90%;" type="text"/>
(c) Guardian's Name	<input style="width: 90%;" type="text"/>
3. Nationality	<input style="width: 90%;" type="text"/>
4. Religion	<input style="width: 90%;" type="text"/>
5. Sex	<input checked="" type="radio"/> Male <input type="radio"/> Female
6. Date of Birth	<input style="width: 80%;" type="text"/>
7. Mailing addr	<div style="border: 1px solid black; height: 40px; width: 90%;"></div>

Figure 10: Online Application Form

### 5.5 E-Learning Section

This is the most important part of our project. We try to built online communication to always contact with the students and teacher. It will help us in our study as well as to increase our communication knowledge. The E-learning part will contain the following menus and functionality.

The necessary figure shown in below.



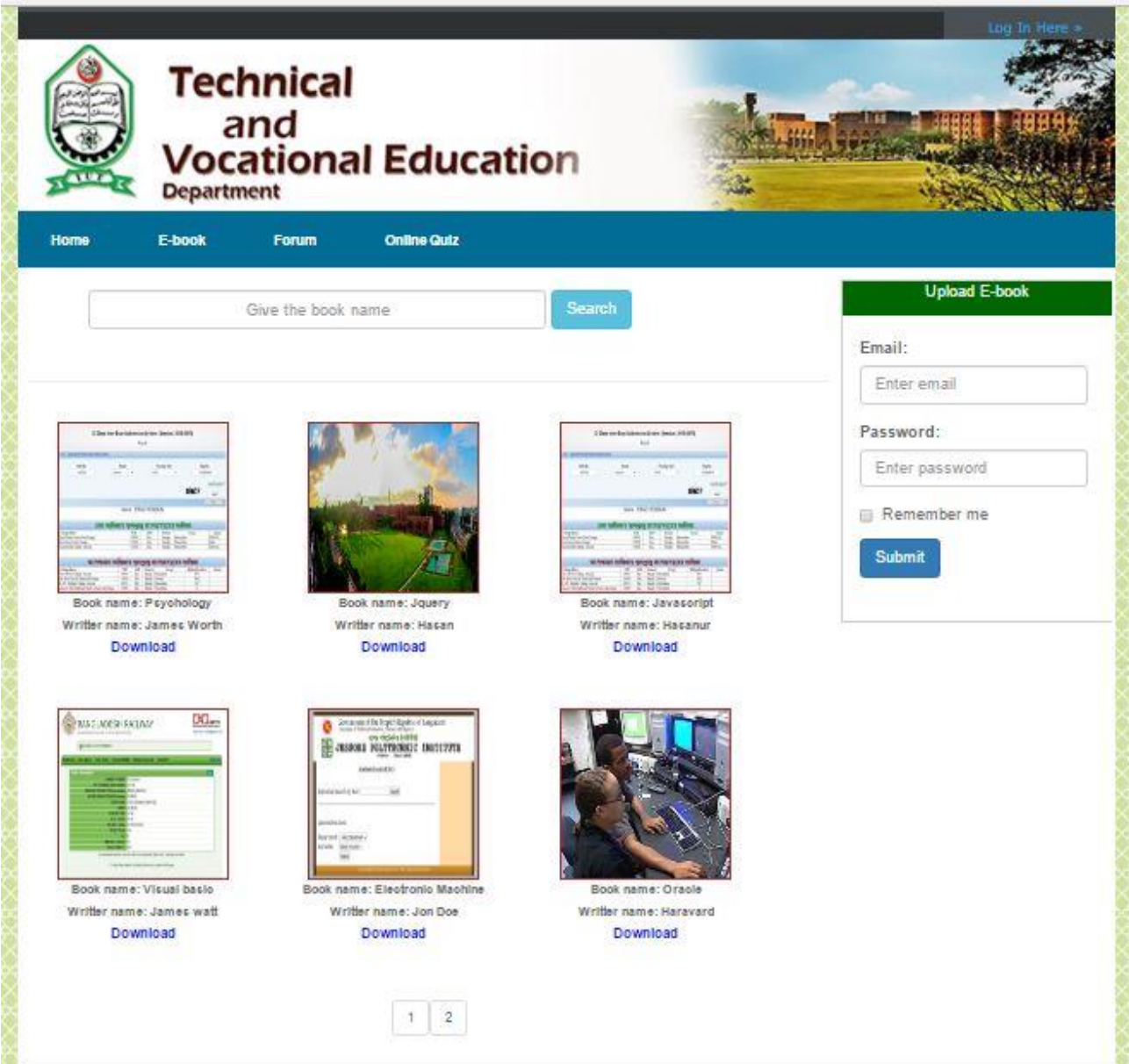


Figure 11: E-Learning Section

### 5.6.1 E-Book

In teaching learning system the popular term is lecture. Every teacher makes their lecture according to the level of students. Some time they provide their lecture to the students. Now a day's teacher provides soft copy of their lecture. So in our system a teacher can upload their lecture copy to his or her specific group of students. Lecture section has some functionality like –

- ❖ Add new lecture
- ❖ Edit lecture
- ❖ Delete lecture

Add new lecture: There is a form for adding new Lecture for specific semester students and course. Here a teacher should enter some essential information for making a new lecture like, Department of Students, Semester of Students Course ID, Lecture Topic, Description, Reference, Lecture content with upload button. These types of information are help to specify the specific group of students from the TVET institute.

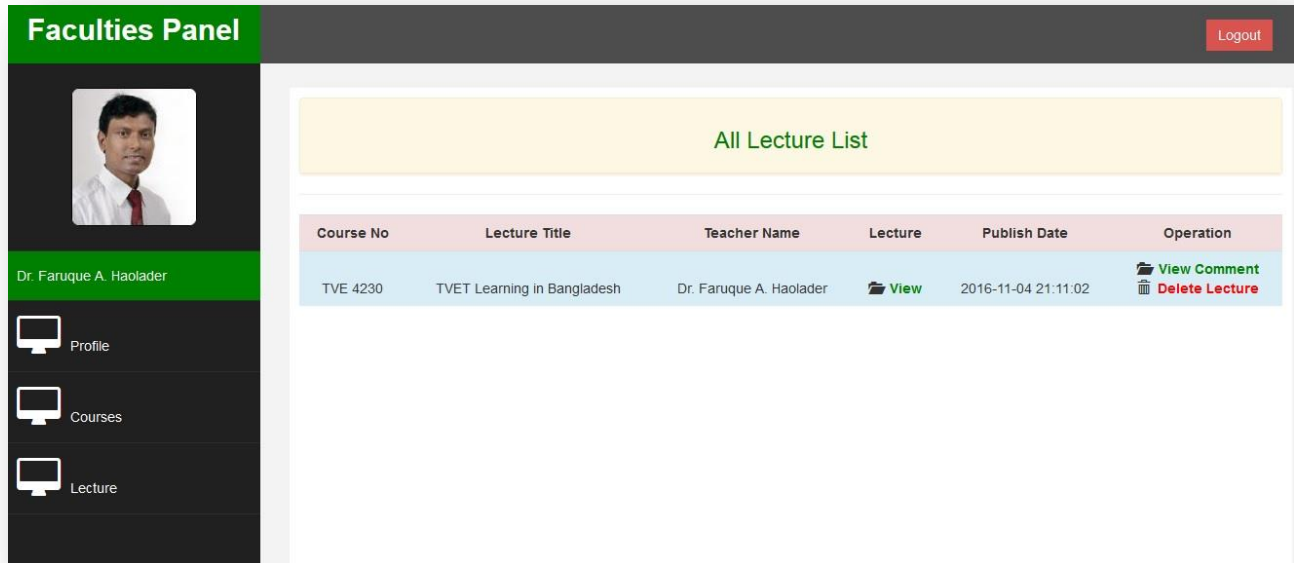


Figure 12: Class lecture maintain

In this form we use the server site validations by using PHP which are help to prevent the unauthenticated data insertion to database. In our database there is a table named Lecture with some important fields like, lecture\_id, course\_id, lecture\_topic, description, reference, stu\_institute, stu\_department, stu\_semester, files, lecture\_date, teacher\_id for storing and retrieving the lecture information for teacher user and student user.

Some information is stored into database from the outside of this form like, student institute, lecture date, teacher id. This information is collected from the session variable and query outputs which are provide more accuracy for adding new lecture.

Here the lecture contents or files are store in the specific folder in our system.

**View lecture:** a teacher user can view all lectures which are created by him or her. He or she can

see some information like Lecture no, Course ID, Lecture Title, Student Institute, Student Department, Student Semester and Lecture date view content for each unique lecture. These lectures are viewed according to lecture\_id from the Lectures table of this system data base.

There are two important functionalities in this page such as the delete and edit lecture. Teacher can chose the option if needed to update or delete the lectures from database.

**Edit lecture:** A teacher user can edit or update the information of specific lecture. In this page we also use the server site validation by using PHP code. Teacher can edit or update all the fields of the lecture information.

**Delete lecture:** A teacher user can delete the information of specific lecture. In this page we also use the server site validation by using PHP code. Teacher can delete lecture information from lecture table of our system database.

## **5.6.2 Forum**

### **Blog**

In our blog part users can read other's blog posts in educational aspect. They can make Discussion with comments and share knowledge to each other. Also can get important News from the Forum. The figure to login into Forum given below

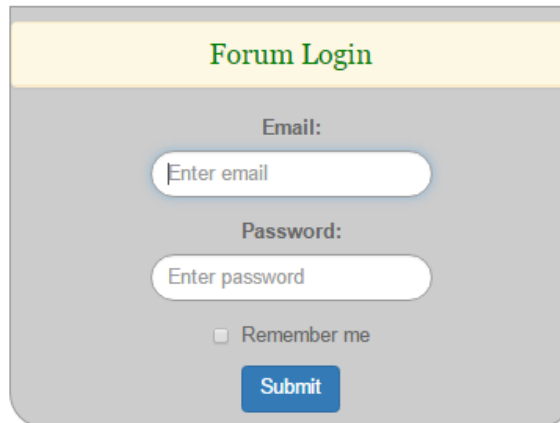


Figure 13: Forum Login page

In blog part of our project register users can write blog post, write comment to others post's and delete, update and their posts. All blog posts data saved in our database table named —blog\_posts|. There is a primary key field named postID, and also a foreign key field named user\_id, others field like postTitle, postCont, postdate contain description of the posts.

If a register user login and read any post they can see the comment box and can write comment.

But if the users are not registered or not logged in then they cannot see the comment write section to write comment. A message will remind him/her that he/she is not logged in or not register user, and also show a link to register or login.

### Teacher assistant

Teacher assistant is the most important part of our system. There are many tasks performed by teachers and students. In this area there are two types of users.

- ❖ Teacher user
- ❖ Student user

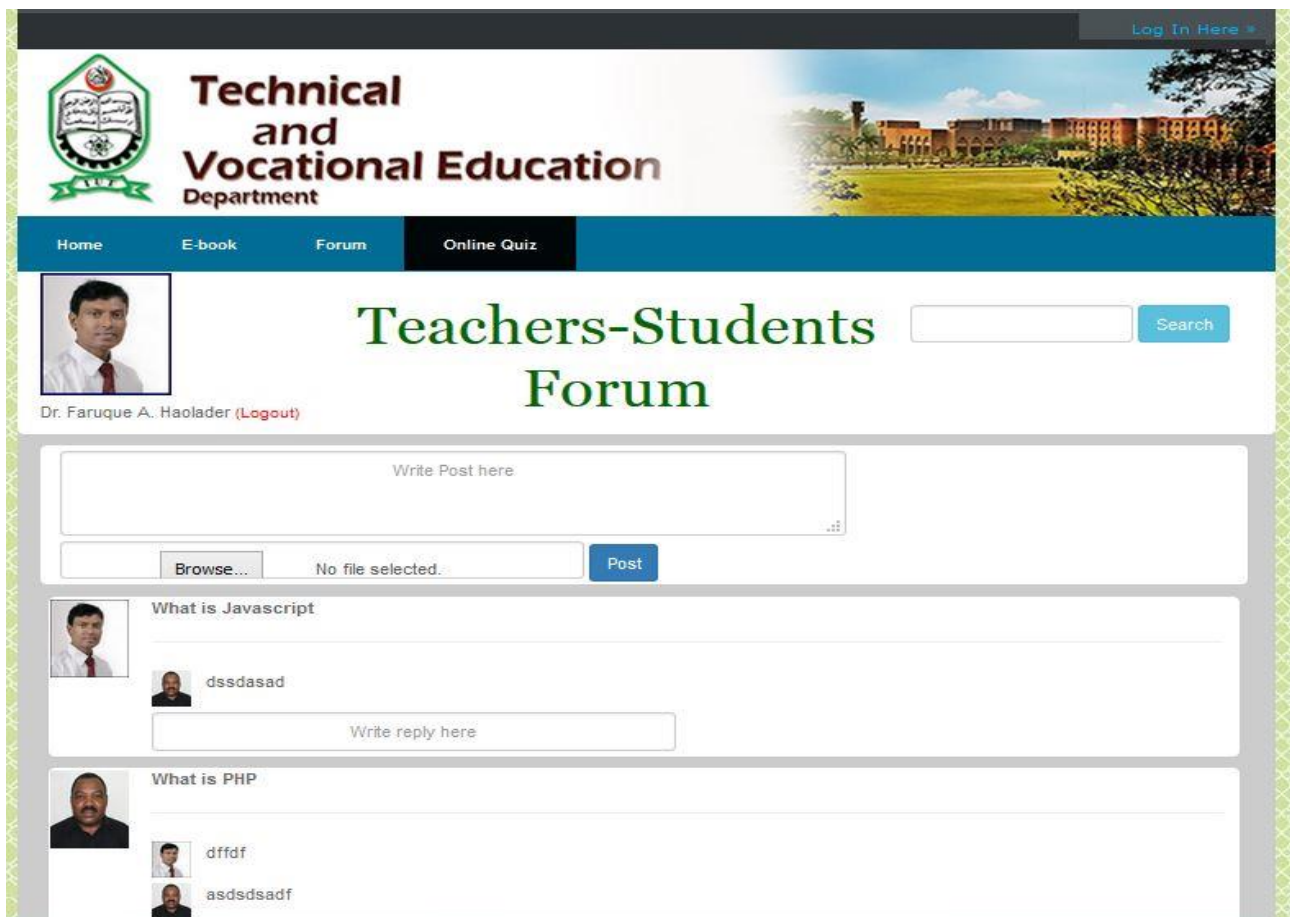


Figure 14: Teacher-Student Communication in Forum

In our system only one log in form for login as a teacher or student but after log in there are two types of profile called student profile and teacher profile page.

### 5.6.3 Online Quiz

The Online Quiz section will provide an interactive examination system that will be an automated system where student can join in the quiz test from any place any time over the world.

At first the logged in by providing authentic user name and password: The figure of Online Quiz shown in below

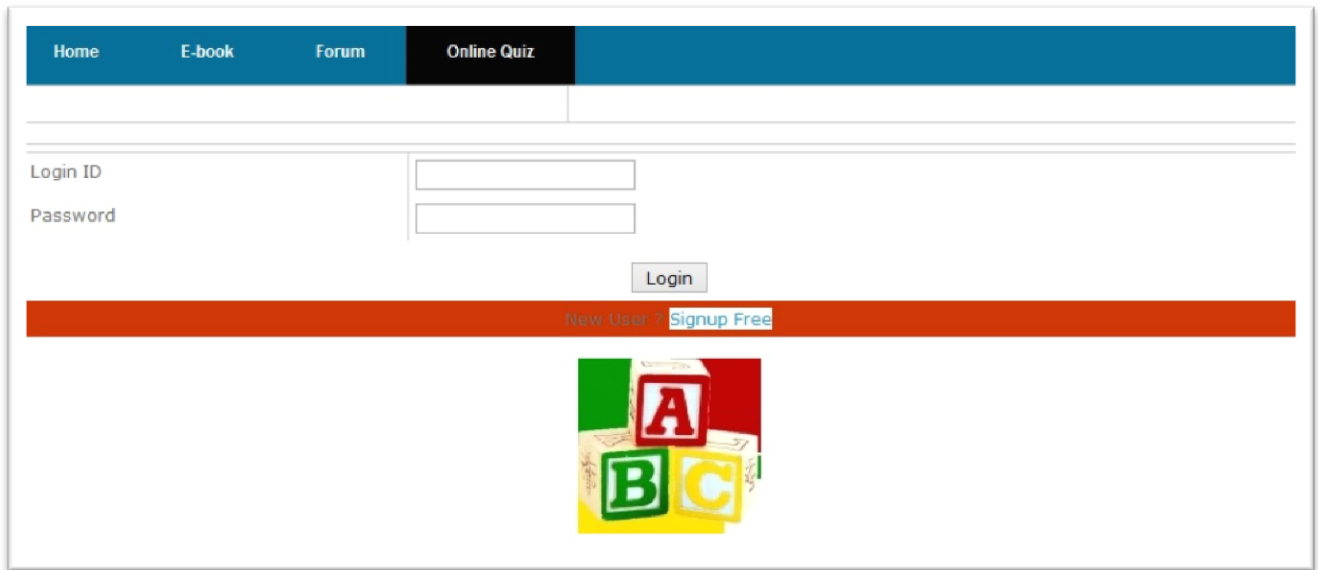


Figure 15: Quiz Login Page

### 5.6.4 Tutorial

In Tutorial part register user can write text tutorial and upload video tutorial and download other's tutorials. They can also update or delete their own tutorials.

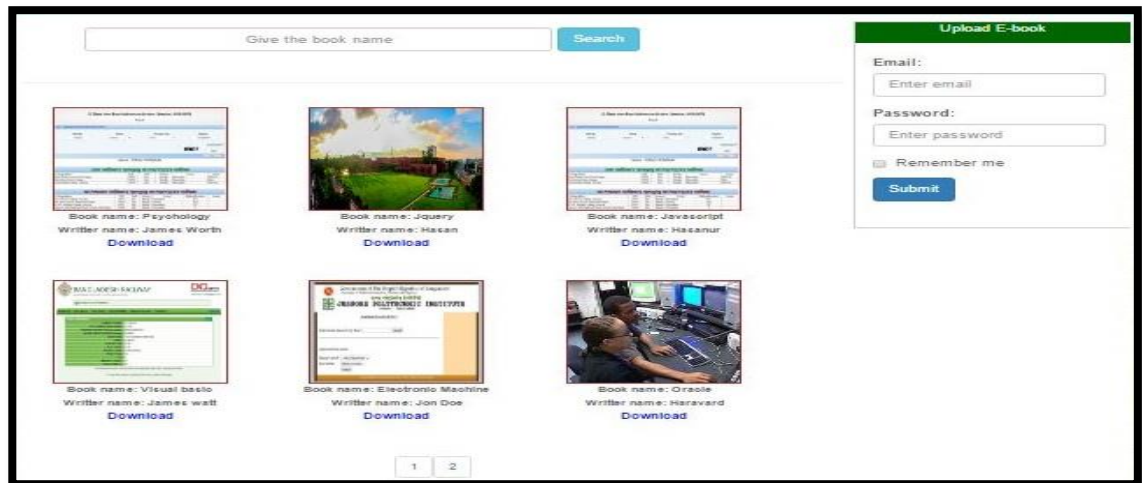


Figure 16: Tutorial Collections

In our data base there is a table named —tutorials| contain the all tutorial data.

There is a field named tutorial\_id with primary key and there is a field foreign key named user\_id. Other field contains the all description of the tutorial. But if the user not logged in or not register then he or she can just read tutorials.

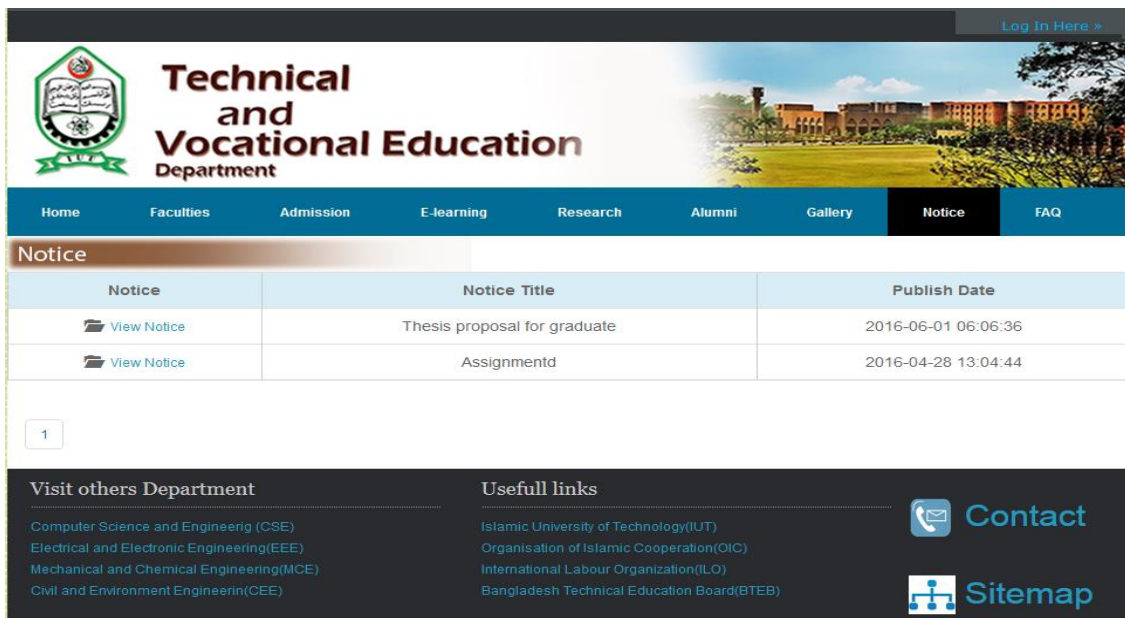
## 5.7 Research

This section will contain the necessary information related to the Research and Publications. It has the following field

- ❖ Research Area
- ❖ Journal Publication
- ❖ Research Facilities

## 5.8 Notice

As a teacher user they can only give the notice for their specific group of students like a teacher is a teacher of computer department in Dhaka polytechnic institute and he or she can give Notices only for this institute's student groups. A teacher can take one or more subjects in different departments so he or she can also give the notices on his or her respective department's students or other department's students.



The screenshot shows the homepage of the Technical and Vocational Education Department. The header includes the department logo and name, a navigation menu with items like Home, Faculties, Admission, E-learning, Research, Alumni, Gallery, Notice, and FAQ, and a 'Log In Here' link. The main content area displays a table of notices with columns for Notice, Notice Title, and Publish Date. Two notices are listed: 'Thesis proposal for graduate' published on 2016-06-01 06:06:36, and 'Assignmentd' published on 2016-04-28 13:04:44. The footer contains links to other departments (Computer Science and Engineering (CSE), Electrical and Electronic Engineering (EEE), Mechanical and Chemical Engineering (MCE), Civil and Environment Engineerin(CEE)), useful links (Islamic University of Technology(IUT), Organisation of Islamic Cooperation(OIC), International Labour Organization(ILO), Bangladesh Technical Education Board(BTEB)), and icons for Contact and Sitemap.

Notice	Notice Title	Publish Date
<a href="#">View Notice</a>	Thesis proposal for graduate	2016-06-01 06:06:36
<a href="#">View Notice</a>	Assignmentd	2016-04-28 13:04:44

Figure 17: Notice Publication in Home Page

Notice has notice\_id which is unique and each notice is given for a specific semester students which are already registered user in our system. A specific semester students can view notices which are given by respective teacher of this students group.

In the notice are there are some functionalities that are very much important. These are

- ❖ Add new notice
- ❖ View notices

- ❖ Edit notice
- ❖ Delete notice

Add new notice: There is a form for adding new notice for specific semester students and course. Here a teacher should enter some essential information for making a new notice like, Course ID, Department of Student, Semester of Students, Notice Title and Description. These types of information are help to specify the specific group of students from the TVET institute. In this form we use the server site validations which are help to prevent the unauthenticated data insertion to database.

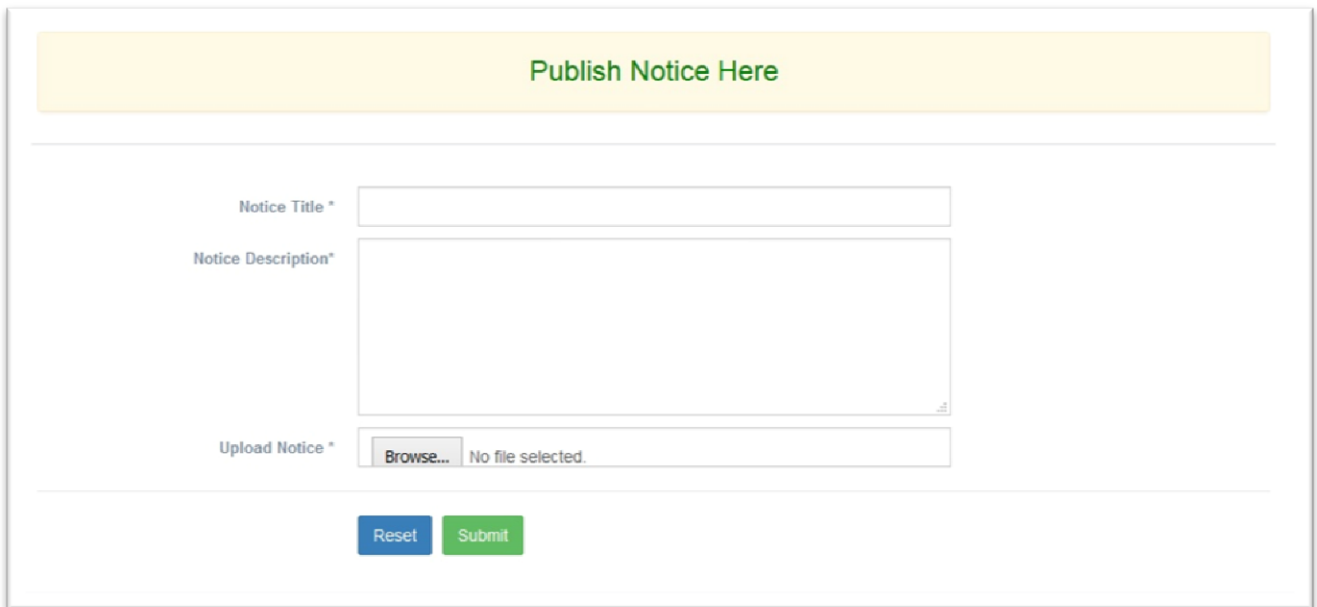


Figure 18: Add a New Notice

In our database there is a table named notices for storing and retrieving the notice information for teacher user and student user.

**View notice:** a teacher user can view all notices in the tabular format which are given or created by him or her. He or she can see some information like Notice no, Course ID, Notice Title, Student Institute, Student Department, Student Semester and Notice Date for each unique Notice. These notices are viewed according to Notice\_id from the Notices table of this system data base.

There are two important functionalities in this page such as the delete and edit notice. Teacher can chose the option if needed to update or delete the notices from database.

**Edit notice:** A teacher user can edit or update the information of specific notice. In this page we also use the server site validation by using PHP. Teacher can edit all the fields of the notice information.



All Published Notice				
Notice	Notice Title	Description	Publish Date	Control
<a href="#">View Notice</a>	Assignmentd	sasa	2016-04-28 13:04:44	<a href="#">Delete</a>
<a href="#">View Notice</a>	Thesis proposal for graduate	This is the notice for final year student for Thesis proposal	2016-06-01 06:06:36	<a href="#">Delete</a>

1

Figure 19: Notice Maintain

**Delete notice:** A teacher user can delete the information of specific notice. In this page we also use the server site validation by using PHP. Teacher can delete notice information from notice table of our system database.

### 5.8 Alumni Information

It will contain the information of the Students who has already completed this Degree from this University. It also contains their current working place and necessary contacts.

The screenshot shows the 'Alumni' section of a website for the Technical and Vocational Education Department. The navigation bar includes Home, Faculties, Admission, E-learning, Research, Alumni (selected), Gallery, Notice, and FAQ. The main content area displays a list of alumni profiles:

- Md Abu Rayhan**: Email: rayhan@gmail.com, Specialization: CSE, Passing year: 2016, Current Job: Janata Bank, Country: Bangladesh
- Md Hasan**: Email: hasan@gmail.com, Specialization: CSE, Passing year: 2014, Current Job: Sr. Officer, NCC Bank, Country: Bangladesh
- Md Mohiuddin Mamun**: Email: mamun@gmail.com, Specialization: CSE, Passing year: 2015, Current Job: Junior Instructor, Golpangang polytechnic institute, Country: Bangladesh
- Md Musaddek Hossain**: Email: musaddek@gmail.com, Specialization: CSE, Passing year: 2016, Current Job: Junior instructor, Dhaka Mohila polytechnic Institute, Country: Bangladesh
- Md Riad Hossen**: Email: hossen@iut-dhaka.edu

Figure 20: Alumni Profile

## 5.9 Site Map

A site map is a list of pages of a web site accessible to crawlers or users. It can be either a document in any form used as a planning tool for Web design, or a Web page that lists the pages on a Web site, typically organized in hierarchical fashion.

Sitemaps make relationships between pages and other content components. It shows shape of information space in overview. Sitemaps can demonstrate organization, navigation, and labeling system like below:

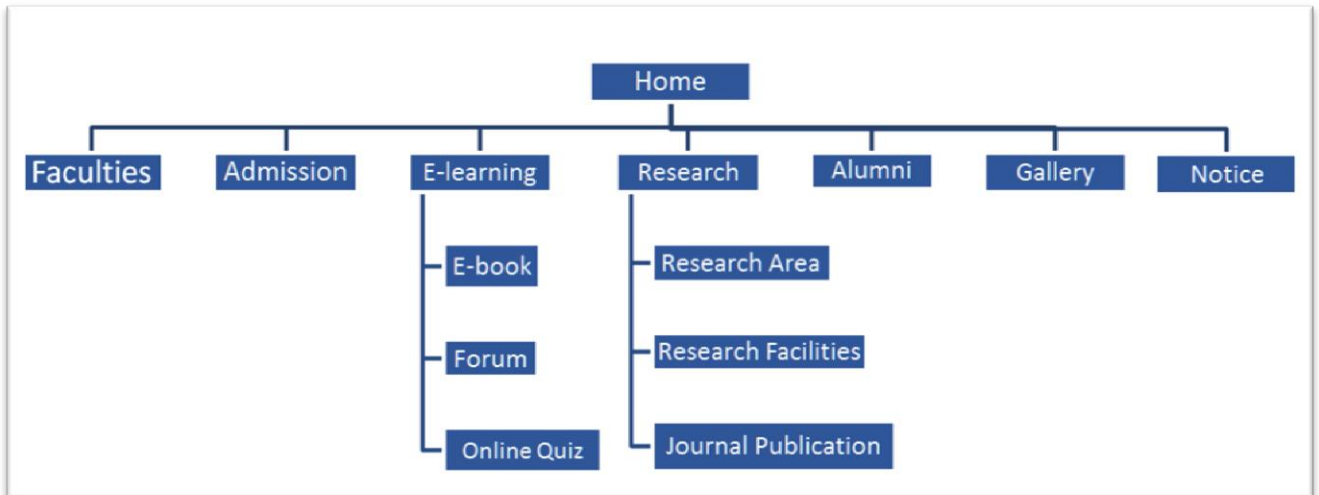


Figure 21: Site Map of total website

## **Chapter 6: Conclusion**

For our system we have completed paper work and survey the TVET present system analysis. We have collected data from TVET students and teachers from government and nongovernment polytechnic institutes like Dhaka polytechnic Institute, National polytechnic institute, department of TVE in IUT and other institutions in Bangladesh. We have seen from our survey report there are many contents are too much needy for our TVET system.

We have designed and developed our whole system including different types of module like tutorial, blog, chat and teacher assistant system which is completely web based. We have also done some basic works for creating teacher assistant platform.

Our future works will be defined by different works like publishing our system live in online with an appropriate domain name for giving opportunity to all of our TVET system users, establishing the teacher assistant application with cloud computing facility and a strong administration for managing our system and enhancement of new facilities for TVET system which will help the TVET users properly and purposefully.

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