

Final Project Report

**An E-learning Tool for Minimizing
Communication Gap**

And Interaction Delay



Project Supervisor

Sir: Khurram Khan

Submitted By

Adnan Asif

ID 101927017

EXORDIUM

In the name of Allah, the Compassionate, the Merciful.

Praise be to Allah, Lord of Creation,
The Compassionate, the Merciful,
King of Judgment-day!

You alone we worship, and to you alone we pray for help,
Guide us to the straight path

The path of those who you have favored,

Not of those who have incurred your wrath,
Nor of those who have gone astray.

TABLE OF CONTENTS

1.1	SCOPE OF THE PROJECT	6
1.2	FUNCTIONAL REQUIREMENTS	6
1.3	NON-FUNCTIONAL REQUIREMENTS	8
1.4	USE CASE DIAGRAM(S).....	8
1.5	USAGE CASE SCENARIOS.....	11
1.5.1	Usage Scenarios Related to Administrator	11
1.5.2	Usage Scenario Related to Teachers	13
1.5.3	Usage scenarios related to Students	14
2	INTRODUCTION OF THE PLANNING PHASE	ERROR! BOOKMARK NOT DEFINED.
2.1	ADOPTED METHODOLOGY	ERROR! BOOKMARK NOT DEFINED.
2.1.1	ELT Process Model	Error! Bookmark not defined.
2.1.2	Reasons for choosing the Methodology.....	Error! Bookmark not defined.
2.2	WORK PLAN (USE MS PROJECT TO CREATE SCHEDULE/WORK PLAN).....	ERROR!
	BOOKMARK NOT DEFINED.	
2.3	GANTT CHART	ERROR! BOOKMARK NOT DEFINED.
3	INTRODUCTION (OF ANALYSIS AND DESIGN PHASE)	ERROR! BOOKMARK NOT DEFINED.
3.1	OVERVIEW (OF PROPOSED SYSTEM)	ERROR! BOOKMARK NOT DEFINED.
3.2	DATA FLOW DIAGRAMS (DFD).....	ERROR! BOOKMARK NOT DEFINED.
3.3	LEVEL 1 DFD	ERROR! BOOKMARK NOT DEFINED.
3.4	ENTITY RELATIONSHIP DIAGRAM (ERD)	ERROR! BOOKMARK NOT DEFINED.
3.5	ACTIVITY DIAGRAM	ERROR! BOOKMARK NOT DEFINED.
3.5.1	Login Process (For Teacher, Admin and Student)	Error! Bookmark not defined.
3.5.2	Ask Question Process (for Students).....	Error! Bookmark not defined.
3.5.3	Listen/See Conversation Process (for Students).....	Error! Bookmark not defined.
3.5.4	Reply Student’s Question (for Teachers).....	Error! Bookmark not defined.
3.5.5	Maintain Virtual Class (for Teachers)	Error! Bookmark not defined.
3.5.6	Update Database Details (for Admin).....	Error! Bookmark not defined.
3.6	SEQUENCE DIAGRAMS	ERROR! BOOKMARK NOT DEFINED.
3.6.1	Login Process (for Teachers, Students and Admin).....	Error! Bookmark not defined.
3.6.2	Ask Question Process (for students)	Error! Bookmark not defined.
3.6.3	Listen / See Conversation (for students)	Error! Bookmark not defined.

3.6.4	Maintain Virtual Class (for Teachers)	Error! Bookmark not defined.
3.6.5	Reply Student's Question (for Teachers).....	Error! Bookmark not defined.
3.6.6	Update Database Details (for Admin).....	Error! Bookmark not defined.
3.6.7	Architecture Design Diagram	Error! Bookmark not defined.
3.7	CLASS DIAGRAM	ERROR! BOOKMARK NOT DEFINED.
3.8	DATABASE DIAGRAM.....	ERROR! BOOKMARK NOT DEFINED.
3.9	INTERFACE DESIGN	ERROR! BOOKMARK NOT DEFINED.
3.10	DEPLOYMENT DIAGRAM	ERROR! BOOKMARK NOT DEFINED.
3.11	TEST CASES.....	ERROR! BOOKMARK NOT DEFINED.
3.12	CLASS DIAGRAM.....	ERROR! BOOKMARK NOT DEFINED.
3.13	DATABASE DESIGN	ERROR! BOOKMARK NOT DEFINED.
3.14	INTERFACE DESIGN	ERROR! BOOKMARK NOT DEFINED.
3.14.1	Login Page (for teacher, student and admin)	Error! Bookmark not defined.
3.14.2	Administration Interface	Error! Bookmark not defined.
3.14.3	Course Selection Page for Student	Error! Bookmark not defined.
3.14.4	Virtual Class room environment for student	Error! Bookmark not defined.
3.14.5	Course Selection Page for Teacher	Error! Bookmark not defined.
3.14.6	Virtual Class room environment for Teacher	Error! Bookmark not defined.
4	DEPLOYMENT DIAGRAM	ERROR! BOOKMARK NOT DEFINED.
4.1	DEVELOPMENT DIAGRAM OF APPLICATION	ERROR! BOOKMARK NOT DEFINED.
5	TEST CASES.....	ERROR! BOOKMARK NOT DEFINED.
5.1	TEST CASES.....	ERROR! BOOKMARK NOT DEFINED.
5.1.1	Test Case 1: Testing the Log In mechanism of System for Teacher/Student/Admin.....	Error! Bookmark not defined.
5.1.2	Test Case 2: Testing the Listen / See Conversation of System for Student.....	Error! Bookmark not defined.
5.1.3	Test Case 3: Testing the Raise Hands/Drop Hands of System for Student	Error! Bookmark not defined.
5.1.4	Test Case 4: Testing the Ask Question of System for student	Error! Bookmark not defined.
5.1.5	Test Case 5: Testing the Maintain virtual class of System for Teacher.....	Error! Bookmark not defined.
5.1.6	Test Case 6: Testing the Answer Student Questions of System for Teacher	Error! Bookmark not defined.
5.1.7	Test Case 7: Testing the Update Database Information of System for Admin	Error! Bookmark not defined.

CHAPTER 1
Gathering & Analyzing Info

1.1 *Scope of the Project*

This Software Project (ELT-MCGID) is a web based tool that will help distance learning based universities and institutes; It will help to minimize the communication gap between teachers and students in Distance Learning Based universities such as VU (Virtual University).

This software will be helpful for universities, using this software teachers and students can communicate with each other through text, and all the communication done will create a virtual class environment and there is no limit for maximum students that can communicate with teacher.

There are some major features that distinguish our software from other web based messengers/software's (such as skype, yahoo)

- This is a web based messenger which can be easily integrated with any university database.
- There is no limit of maximum students in virtual class (conference of teachers and students) as compared to Skype or other messenger.
- There is no installation required for end users (every student can easily access it online)
- Real class features such as white board “raising and dropping hands” by students to ask a question are also available in virtual class.
- Teachers can control the virtual class environment by blocking/unblocking disturbing students and also allow/disallow students to ask a question by either text, or whiteboard.
- There is an administration interface where administrator can update the database queries to connect and fetch student and teacher data.

1.2 *Functional Requirements*

ID	Requirements
1	Our Application have a web interface which asks users to login having username and password form entries, it will authenticate the user for username and password if correct it will detect user type and forward to specific panel where user can do any action related to its type
In Case of Student Login	
1	When student logged in and identified by system student will be redirected to student panel
2	System will Detect the Student's Subject list in which he/she will be enrolled and display a list of the subjects when selected student will be forwarded to specific class room
3	Student Panel Includes all the list of online student ID's.
4	Student panel includes Text Box for text chat purposes which is disabled by default
5	Student Panel Includes class timing course id ,course name .

6	Student Panel includes button “Raise Hands”
7	Student Panel Also includes a White Board , where students can see the white board , In case of allowed to ask a question , it will be enabled and it will display the virtual pen also
8	When “Raise Hands” button clicked the student added to ListB
9	System will split online students in to two lists , where ListA is the list of online students, and ListB the students who wants to ask a question
10	When the teacher allows the student to ask the question , first student in the ListB queue list will be allowed to ask the question
11	When teacher allow next student it will be allowed to ask the question
12	
In Case of Teacher Login	
1	When Teacher will identified by the system teacher will be redirected to Teacher Panel
2	System will list all the online students to the teacher
3	System will allow additional controls on students
4	System will display an additional control for blocking a disturbing student
5	System will display controls for text chat
6	System will display white board and a virtual pen (additional control of erase board) to write on white board so teacher can write complex figures or drawings
7	System display a text box where teacher can type any text
8	When student raise hands and the students added to list B , system will give an option to teacher where allow or disallow student to ask a question or write text on textboxes or white board
In Case of Administrator Login	
1	Once Administrator Identified and logged in the system will redirect the admin to admin panel
2	System will display configuration interface where administrator can update the database information
3	System will display 2 query boxes where the administrator can write database queries to fetch the username and passwords
4	Information will be validated , system will try to connect to database entered and if correct information will be saved successfully
5	If system will unable to connect it will display error to admin , that data entered is incorrect
6	Admin panel include add new student ,teacher ,subject and also view enrolled students, teachers and existing subjects.

1.3 *Non-Functional Requirements*

<u>ID</u>	<u>Requirements</u>
1	In order to access the software, user must have PC with internet connectivity, Unauthorized users/visitors not allowed to join Virtual Class except the persons related to the university (Teachers,Students,Administrator)
2	Software will allow unlimited users /students to communicate and join virtual class
3	Security is Important feature of our application, Online registration allowed , user can communicate using our system, guests is not allowed to login to virtual class
4	Our system will use external database for student and teacher information, the information can be updated and managed by administrator from admin panel
5	Controlling the Virtual class environment is a most important feature of our software where teacher can control the class as in real class
6	Reusability is another feature , which allows us to use the software with any university system
7	The System has a conferencing mode where all the students and teacher of a specific subject can communicate with each other through text and visual.
8	All the students will be able to see or what the teacher writes.
9	Students can also ask questions and get answers online and instantly by the teacher

1.4 *Use Case Diagram(s)*

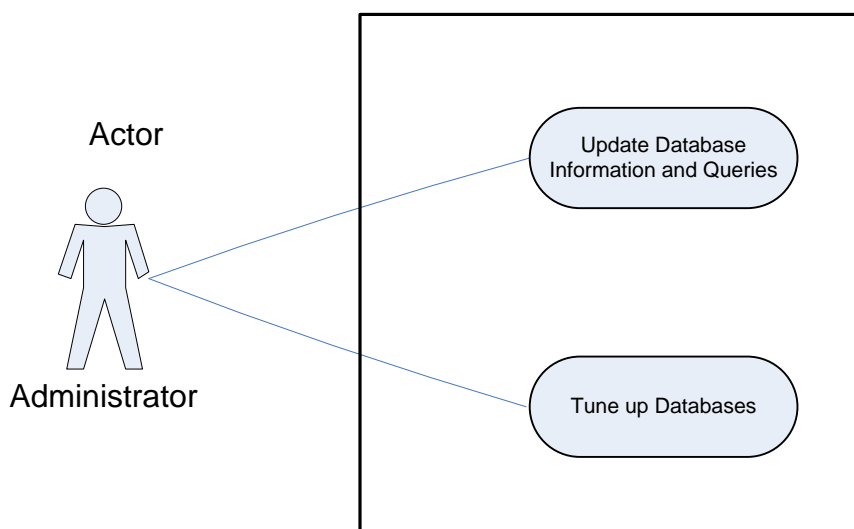


Figure 1-admin role in VC

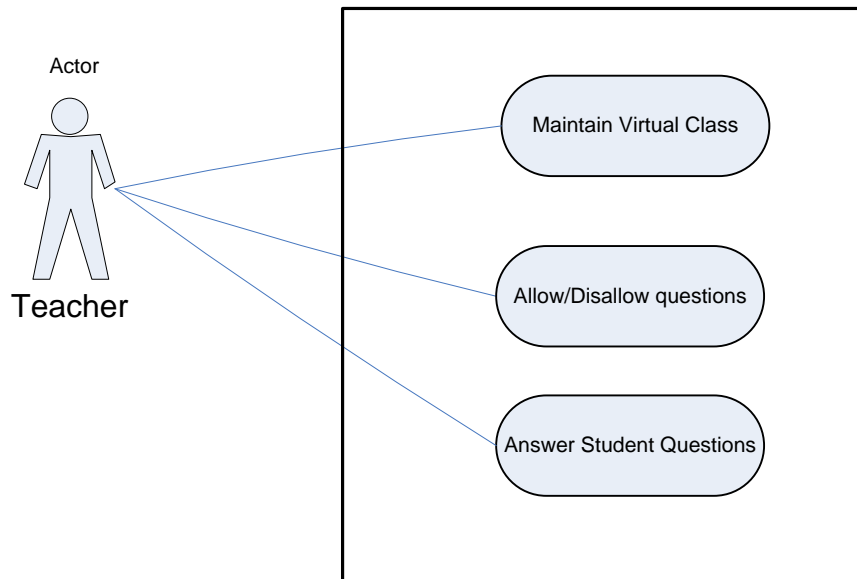


Figure -2 Teacher Role in VC

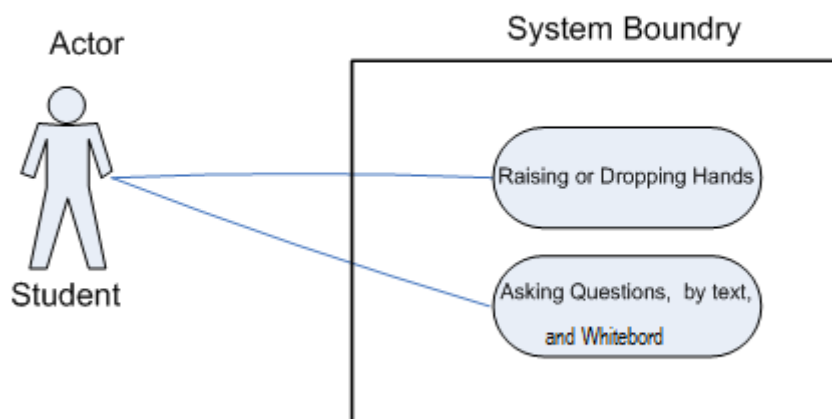


Figure-3 Student Role in VC

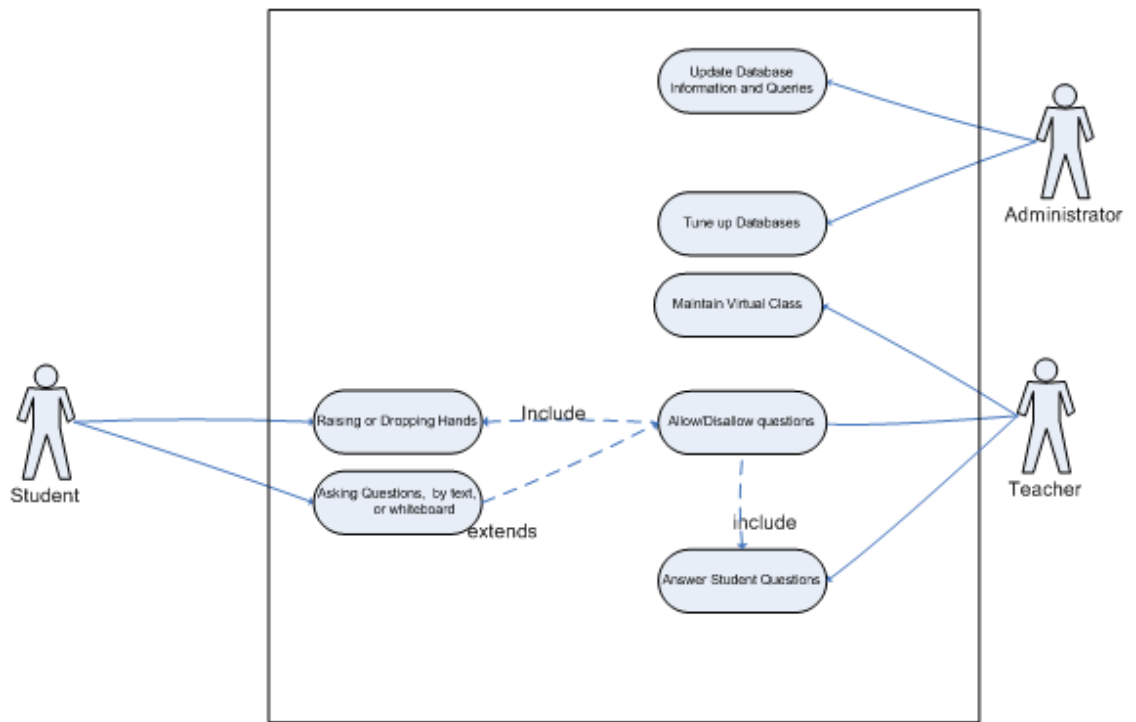


Figure 4 – Whole System Overview

1.5 Usage Case Scenarios

1.5.1 Usage Scenarios Related to Administrator

Use Case Title	Update database information and queries	
Use Case Id	ELT-MCGID01	
Requirement ID	4	
Description: Administrator might login to update database information, database information add new student, teacher and subject, also view enrolled student, teachers, and existing subjects. This case also includes Queries to fetch username and passwords for students from university database		
Pre Conditions: Must have login to update information using our system main screen		
Task Sequence		Exceptions
1. Administrator must have logged in to update the information		System will check the text fields , try to connect to database that is entered by administrator, if system cannot connect to database then it will give an error to correct the database information
2. System will Display the text fields and button of student info , teacher info and existing subjects info and mysql queries		
3. System will check the admin username and password , it will try to connect to host using the provided information and if successful save the information		
Post Conditions: System check for validity of data by connecting with database and setting successfully saved.		
Unresolved issues:		
Authority: Administrator		
Actor: Administrator		

Use Case Title	Tune up databases	
Use Case Id	ELT-MCGID02	
Description: Administrator has a duty to keep update the database information, in order to work system smoothly the admin must tune up the external database system for speed and space.		
Pre Conditions: Administrator must tune up external databases		
Task Sequence	Exceptions	
1.Administrator might manage the external database	If the external database is correctly managed then system will work smoothly, in case of any error with the database system might not able to logged in the existing users(Teachers/Students)	
2.External Database must be optimized for the connectivity		
Post Conditions: External databases information must be updated		
Unresolved issues:		
Authority: Administrator		
Actor: Administrator		

1.5.2 Usage Scenario Related to Teachers

Use Case Title	Maintain virtual class
Use Case Id	ELT-MCGID03
Requirement Id	7
Description: In order to run VC smoothly, Teacher might force students to follow the rules of a class, to implement this, teacher has to block or unblock a disturbing student.	
Pre Conditions: Teacher must login to view its panel with class management capabilities	
Task Sequence	
1. System will display a Block student option to teacher to avoid any disturbance in class	
2. Once Blocked by Teacher, a student will be automatically kicked out of the class room.	
Post Conditions: System gives an option to block the students to teacher, in case of a disturbing student teacher may block a student and the student will automatically kicked from the virtual class	
Unresolved issues:	
Authority: Teacher	
Actor: Teacher	

Use Case Title	Allow/Disallow Questions
Use Case Id	ELT-MCGID04
Requirement Id	8
Description: During a lecture student might have different questions in mind , for that purpose student might raise hand to ask the question while teacher might allow or disallow the Questioner to ask the question	
Pre Conditions: During the Lecture there might be some questions in student's mind , so student Raise Hands to ask the question	
Task Sequence	
1. There might be some students which might be in ListB, which want to ask question , teacher can allow or disallow them	
2. System will give an option to allow the student in the ListB to ask the question , when allowed student controls will be enabled	

3. After Question, teacher can allow or disallow more students in ListB one by one.
Post Conditions: Teacher have an option to allow the questioner to ask the question , and the questioner will be added into the Specific Queue for questioning
Unresolved issues:
Authority: Teacher
Actor: Teacher

Use Case Title	Answer Student Questions
Use Case Id	ELT-MCGID05
Description: Once the Student ask any question the teacher should reply the question by using text or audio or white board to explain anything	
Pre Conditions: Student might have asked a question before teacher answers it	
Task Sequence	
1. Teacher will be able to TextBox(includes text controls) and whiteboard (includes virtual pen) to answer student questions	
Post Conditions: Teacher might reply students question about the lecture and students are completely satisfied with the answer.	
Unresolved issues:	
Authority: Teacher	
Actor: Teacher	

1.5.3 Usage scenarios related to Students

Use Case Title	Raising or dropping hands
Use Case Id	ELT-MCGID06
Description: During a lecture student might have different questions in mind , In order to ask the question student might be able to Raise Hands as in real class for ask a question	
Pre Conditions: Student might login and might listen the teacher lecture to ask the question	
Task Sequence	
1. System will have Raise Hands check box , if student have question, Student will check the Raise Hands check box	
2. student will be added to ListB (Online Students List who wants to ask question)	
3. If student got the answer , student can uncheck the box and it will be excluded from the listB	

Post Conditions: Student may click “Raise Hands” button to ask the question.
Unresolved issues:
Authority: Student
Actor: Student

Use Case Title	Asking questions by either text, audio or white board
Use Case Id	ELT-MCGID07
Description: During a lecture student might have different questions in mind , Student who raised hands might be added in questioner’s queue list where students can ask on their turn	
Pre Conditions: Student might login and might added in queue list and Teacher might allow the student to ask the question	
Task Sequence	
1. If student will be allowed by the teacher to ask the question, its panel’s Textbox, and Whiteboard will be enabled by the system	
2. where student can use Textbox for asking question by text in case of complex figure student can use whiteboard for questioning	
Post Conditions: Student can ask any question regarding the lecture when allowed by teacher to ask the question by text, white board	
Unresolved issues:	
Authority: Student	
Actor: Student	